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EUREKA,

AN ELUCIDATION OF MYSTERIES IN NATURE—THE PROBLEMS OF SCIENCE.

(WITH DIAGRAMS.)

BY

J. WOOD BEILBY,

Author of the "True Theory of the Earth and Philosophy of the Predicted End:"
"The Cause and its Continuity of the Great Geological Convulsions;"
"Reasons Suggestive of Mining on Physical Principles
for Gold and Coal," &c.

BIBLIOTHECA BODLEIANA

> "Never was there a Dogma more Calculated to Foster Indolence, and to Blunt the Keen Edge of Curiosity, than this Assumption of the Discordance between the Ancient and Existing Causes of Change."—*Lyell's Geology.*

Melbourne:
WALKER, MAY & CO., PRINTERS, 9 MACKILLOP-STREET
(OFF 56 BOURKE-STREET WEST).
1883.

18231. d. 1.

Dedicated

TO THE BRITISH AND FRENCH ADMIRALTIES,

As believed to be Foremost in Investigations as to the Possibility of Change of the Earth's Axis, its Degree, and Direction, Necessitating Reconsideration of the Methods of Defining Latitudes and Longitudes at Sea, with the View of Ensuring Greater Accuracy in the Future, and Accounting for the Apparent Change in Positions Defined by Early Navigators, in Interest of Life and Maritime Prosperity, these Deductions, upon a Long-continued Series of Researches in aid thereof, are respectfully dedicated by the Author.

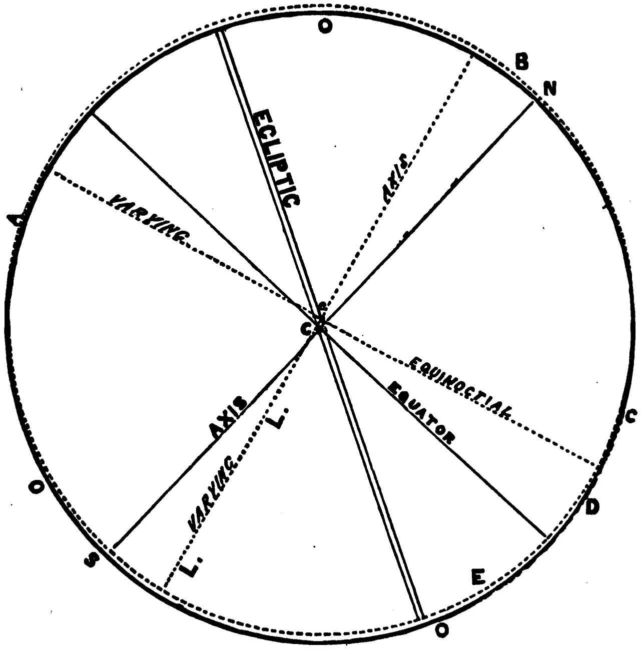
The Proposition sought to be Established is that Certain Natural Phenomena, in Continuous Occurrence under Existing Physical Conditions, operate to render a Fixed Position of the Centre of Gravity of the Earth's Volume practically Impossible. Hence, by Mechanical Law, the Axis Intersecting it must Change, presently Altering the Initial, and all Definitions of Longitude, Westerly in the Northern Hemisphere, and Easterly in the Southern, with Varying Points of Intersection of the Defined Equator, and its Parallels of Latitude. Hence, that these also Vary in Degree of Approximation to the Plane of the Ecliptic, intersecting it at Continuously Changing Points—thus elucidating the Problem of the Precession of the Equinoxes, and concurrently, as Gravitation Necessitates Redistribution of Films of the Oceanic Envelope, the Motive Force evoking the Oceanic Tides.

It is here in Victoria a Locally-ascertained Fact that the 141st Degree of East Longitude, the Defined Boundary of South Australia with Victoria, appears to Overlap into Victoria, to an Increasing Degree at each Successive Definition at Prolonged Periods; and this Result was foreseen and communicated to the Respective Governments by the Author prior to any of the Later Definitions which led to Repeated Applications by South Australia for Re-Surveys and Re-Adjustments.

The Demonstration is not that of an Enlarged Circum-Polar Ice-Cap, which has become a Scare of the Subject to Science, but that Natural Causes result in Change of the Earth's Centre of Gravity, and Terrestrial Gravitation then necessarily accomplishes Changes heretofore deemed Astronomical Problems. The Links of the Sequences of Operation of this Natural Law are Successively Traced as Varied Phenomena noted by Science but referred to Hypothetic Causes; the Reasoning of Scientific Authorities having Heretofore Been, in effect, to Deny the Power of Terrestrial Gravitation to Overcome the Centrifugal Force Generated by Rotation. Hence the Axis was Deemed Unalterable, although the Oceanic Envelope was Assumed to Bulge Equatorially, so as Necessarily to Affect the Centre of Gravity. This was Unphilosophical.

EUREKA,

AN ELUCIDATION OF MYSTERIES IN NATURE.



OOO. Spherical outline of the globe, in accordance with present geographical delineation, exclusive of equatorial expansion and polar depressions.

C. Assumed centre of gravity, intersected by the Polar axis, as now defined.

c. Varying centre of gravity of the earth's volume, resulting from continuous operation of natural laws.

A—B Orbicular rise of water level, on north-western Pacific coasts, from change of centre of gravity, tending thereto; such changes to the extent of but six miles, or one thirteen-hundredth part of the earth's diameter, coercing—by the law of terrestrial gravitation—the fluid envelope to reconfiguration of its volume, adequately to submerge beneath a deep sea the highest mountains on the globe, and continental areas, as in former epochs.

NCDE. Orbicular depression of water level on coasts of East Greenland, Northern Europe, Australasia, &c., as noted by Geology; the land apparently rising, the result of reconfiguration of oceanic volume, as above stated.

LL. Trend of varying axes, with their parallels the meridians of longitude, diverging westerly in the northern, and easterly in the southern hemispheres. Their perpendiculars—parallels of latitude similarly varying.

N.B.—The general proportions, angles of intersection, and inclinations in the sketch are unavoidably incorrect, but it may convey the ideas submitted.

CHAPTER I.

INTRODUCTORY.

The author, believing that, in course of his researches into the phenomenal evidences of the operation of natural laws upon the earth's surface, and its oceanic envelope and surrounding atmosphere, he has traced the links of a discovery of vast importance, and disclosed the cause of successive alternations of position of oceans and continents, and glacial and torrid climates on the globe, revealed by Geology, now solicits consideration of his facts and arguments by men of scientific ability, untrammelled by a too rigid adherence to the early hypotheses which advanced science now calls in question.

The author has on several occasions, within the last fifteen years, endeavoured by contributions to various journals, and in his pamphlets, &c., to submit this discovery to the especial notice of those geologists and students of physics, who admit that the assumption that the earth's axis is capable of change affords the only feasible explanation of some of the most abstruse phenomena disclosed in natural science; and that evidence in demonstration of the fact of such a change, and its direction, and degrees of progression, is at the present day a scientific desideratum.* But that his past efforts on this behalf have failed in winning the attention so important a subject should attract, this renewed effort might perhaps have been unnecessary.

This essay is therefore printed solely for transmission, in a more readable form than manuscript, to scientific associations and intelligent reasoners, from whom the author claims kindly consideration for his want of good literary style, this essay having been written at casual intervals of leisure from business, often discomposing the mind from ready reversion to the several trains of thought, and perhaps inducing repetitions.

Theories of the changes of configuration of sections of the earth's crust, excavation of great valleys, and of the remarkable canyons of Western America, the Norwegian fiords, and similar crevasses of vast dimensions in volcanic formations all over the world, being products of the crumpling of a flexible outer crust, over a gradually cooling volume of internal liquid fire, are now very generally admitted to be untenable. Investigations as to proofs of an increasing heat, according to depth from the surface, are very contradictory of foregone conclusions. The deep sea temperature remains, even in the tropics, very low; and as mining operations to the depth of half-a-mile from the surface have never disclosed an inconveniently increasing temperature, there seems every probability that the friction arising from mining operations has but evoked a portion of the latent heat in all matter, and hence the slight advance in temperature, if any, in such mines does not point towards a core of extreme internal heat. In fact, there is more evidence in favour of a watery interior.

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* The French Admiralty is stated to be now specially engaged in investigating this question.

The agency of ice streams, implying local presence of a glacial climate, as also of oceanic outburst by a sudden convulsion, with its tumultuous surges overtopping lofty elevations and causing vast disrupting landslips, prior to submergence of continental areas—which Geology reveals as having been alternately at varied elevation above, or at varied depths beneath, sea level, through successive cycles of the antiquity of the earth—have probably been adequate to excavate these stated earth grooves. That the action of transition of position from lofty elevation to deep sea bottom, and *vice versâ,* has evidently been sometimes suddenly attained, and, at other times, so gradually, as that its stages present an almost unvarying placidity, is now very generally acknowledged by scientific reasoners on these data.

But the patient investigator has now not only these phenomena in view, but also the similarly varying alternations in zones of climate evidenced by Geology, as from glacial to torrid, and *vice versâ,* at periods in the antiquity of the earth, and apparently prevailing successively within each known part of it. He must trace out the exciting cause by noting the primary action of forces under natural law, and also their inevitable sequences. The degradations of the solid crust, by denudation, and overspreading of drift and diluvium—alternately excavating and depositing disintegrated materials—are revealed in such vast proportions to the limited areas occupied by primary formations, *in situ,* that former theories, based on assumptions of their result from igneous agencies, or exposure to weather influences and river action, of a similar climate to the present, do not now carry conviction of their abstract truth.

The origin of the cañons of the Sierra Nevada is thus described :—

" The indications of the existence, in former times, of glaciers extending over large surfaces in the Cascade Mountains, at least 2,500 feet below the present line of perpetual snow, is closely connected with the formation of the deep cañons through which the streams that drain these mountains, and the plateau of the ' Great Basin' beyond, uniformly flow. We have evidence in the magnitude of the excavation—often in the most resistant material—as compared with their present volume, that the amount of precipitation which formerly supplied them was much greater than now.

" The Golden Gate, the Straits of Carquines, the cañon of Pit River —which, following its tortuous course, is, for nearly a hundred miles, cut through a succession of walls of volcanic rock—the many cañons of Klamath River, those of the Des Chutes and its tributaries, and the gorge of the Columbia, cannot possibly be regarded as rifts formed by volcanic action in the barriers which they traverse. The conclusion seems irresistible that they have been formed principally, if not entirely, by currents of water, of which the present streams are representatives. . . .

" It is evident that glaciers could now be formed in the Cascade Mountains only by a great depression of temperature. This must have been dependent upon one of two causes : either a great and radical difference in the climate of the coast without a change of elevation, or the climate remaining the same, by the elevation of the coast to a general altitude several thousand feet higher than at present. . . .

"The effect of such an elevation as would be required to cover with glaciers the slopes and valleys of these mountains, would be exhibited in various ways. The amount of precipitation upon the sides of these mountains would then be much greater than now. The summit, white with perpetual frost, would rob of all its moisture the wind, then, as now, blowing over it from the Pacific. This precipitation, forming, by its congelation, sheets of ice, reaching far down the mountain sides, and crowding the valleys leading to the Pacific (as also on the eastern slope), would give greater volume and efficiency to the streams, and enable them to score deeply the surfaces of the plateau, and force mountain barriers to reach the ocean, cutting deep channels in its shores where we now find them. . . . The mouth of the Columbia River, for a hundred miles, forms an arm of the sea of great and uniform depth. The channel of the Golden Gate has a maximum depth of nearly fifty fathoms, being greatest in the line of the axis of the chain through which it is cut, and there are numerous deep and narrow fiords on the northern part of the west coast."—*United States Survey for Pacific Railway, vol.* vi., *Geology of the Route, chap.* v., *pages* 42-3.

The clue to investigate cause of a change of the earth's axis is to be sought for in phenomena tending to affect the earth's centre of gravity, for by mechanical law the axis must intersect the centre of gravity; and the clue to detect changes of such centre is to be sought for in observations of any change of position and parallelism of the present sea surface, relatively to the levels of ancient beaches, or of the striae or terrace marks on sides of the larger valleys; for the water level is invariably horizontal to a vertical line thence to the centre.

Unfortunately, the science of our day seems somewhat off the track of such observations. Here, at least, the author has vainly urged that tide gauges, fixed on solid rock bases, should be erected, and observations of tide levels over arcs of surface, between such gauges, be recorded at successive intervals, after lapse of years, to test changes, as well of orbicular level, as of depth, by finely adjusted instruments. Within the last thirty years of continuous opportunity for observation of the shores of Port Phillip, the author has noted a very marked depression of sea surface, that is, a recession and evident shallowing of the sea volume to the extent of about three feet in vertical height, whereby rocks formerly submerged, and their angular fractures protected by sand from the wearing action of shore waves, even at lowest tides, now show their bulk prominently above water at half-tide.

The author has on several occasions submitted to scientific reasoners his matured conviction that the constructer's purpose for the mysterious stone coffer, within what is termed the King's Chamber of the Great Pyramid. of Ghizeh, was to test the variation of the exact degree of parallelism between the surface level of water placed in the coffer, and the horizontal line of original surface level defined in the layers of massive stones built into the walls of the chamber, by successive observations, at prolonged intervals. Also, to note similarly the varying angle or degree of obliquity of the ascertained perpendicular to the plane of the water level—*i.e.*, what is now termed the plumb line—with previously noted definitions of position of parallels or meridians of longitude, deduced from observations from the long passage through the Pyramid of the apparently varying longitude of northern constellations, as demonstrating whether such divergence, if any, is traceable to astronomical or terrestrial agencies. Whether such were, or were not, the objects sought by prehistoric science, the opportunities are open now for similar observations, possibly affording some clue to the period of continuance of existing cosmical placidity.

But changes in the centre of gravity of the earth's volume, though effecting change of position of oceans and continents on the earth's crust, of dire result to all kinds of organized life, and the works of man thereon, might, *per se*, be ineffectual in producing the violent catastrophic desolations revealed by Geology, which appear to require a sudden and complete overthrow of pre-existing equilibrium, which no placid re-adjustment of position and depth of the watery envelope of the globe, could, perhaps, primarily set in motion. The deposit and accumulation through centuries of ice or water upon one segment of the globe in disproportionate bulk to what, under same natural laws, but varying conditions, is amassed elsewhere, and the consequent flow to and deepening of the circumjacent oceans, must produce, in time, leverage adequate to increase the tilt, and ultimately endanger the equilibrium sustaining the globe in any given position upon the plane of her orbit. Hence there is probably a subversive force generating, tending to the accomplishment of a sudden catastrophe, whereby the position of the earth's poles, prolonged into space, might be completely changed as in a day, apart from the slowly progressive movement of the axis, and consequent gradual and almost imperceptible redistribution of the enveloping waters, in maintenance of sphericity of the earth's surface and its oceanic equilibrium. The alteration attained in the centre of gravity of the earth's volume in course of a geological cycle, if varying but within the space of five miles, or say but one sixteen-hundredth part of the earth's diameter, would, by obedience of the enveloping ocean to the law of gravitation, so alter the distribution of its waters, and their surface level, as that the highest of the Himalayahs might be submerged, while, in opposite sections of the earth's crust, the long-submerged continents of Atlantis or Polynesia might rise, until their mountain peaks attain the atmospheric limits of "eternal" snows. Mount Everist, the highest known mountain, being nearly 30,000 feet over present sea level, and the Peak of Teneriffe "fully two miles and a half high," a depression of ocean depth on the latter, and its transference to, and rise on the former to the amount of about 18,000 feet, would raise the Peak to the height of Mount Everist, and completely alter the present configuration of land and sea, though not affecting at all the sphericity of the earth's outline. Much smaller alterations of relative heights of land and depths of ocean, have sufficed to demonstrate evidences to us of almost incredible by-past changes in position of presently populated lands. "Shells, not now British, are found in many parts of Britain from 200 to 1,400 feet over sea level. The table lands were then submerged in a sub-arctic sea, and Great Britain existed as but a scattered archipelago of wintry islands." * "Tertiary marine shells, and sharks' teeth, have been brought from the tops of hills at the base of the Sierra Nevada, over 1,500 feet above the ocean." † Similar records of marine deposits, at varying altitudes, are the common facts of Geology.

The authenticity of the Book of Enoch, rescued from oblivion by Bruce, the Abyssinian traveller, has been doubted, because apparently composed by two writers, one of whom must have resided south-west of the Erythrean Sea, that is, of the Persian Gulf, Red Sea, and that part of the ocean which washes the shores of Arabia, therefore the place described by him must have been south of the Abyssinian Mountains, and in or about our present definition of latitude 9° north, and longitude 36° east. He, however, or his alleged co-author, describes the longest days as containing twelve parts out of eighteen, the whole number into which the day was then divided. Now twelve are to eighteen as sixteen to twenty-four hours in our mode of computation. Ergo, the theologian reviewers hold that this Book of Enoch could not have been written in latitude 9°, but that one of its authors must have resided in a latitude of not less than 36° further north, or within latitudes 45° to 49° north, where the longest days are from fifteen and quarter to sixteen hours. ‡ But if a point south of the Pyramids, now in latitude 9° north, was—when this Book of Enoch was written, prior to the Flood of Noah (assuming its internal evidence of being the work of Enoch or even of any ancient scribe)—in north latitude 45°, the position in latitude of the Pyramids then must have been nearly that of Archangel now, one of astronomical importance for observation of northern constellations, as apparently increasing in longitude of stellar position. The climate also of 66° north would be one conducive to physical energy, requisite in the Pyramid builders, and far in excess of that developed in the present semi-tropical climate of Egypt. Geology discloses that prior to the last revolution, presumably that of the Deluge, Great Britain was in a glacial climate, while Australia was in one of semi-tropical characteristics, which are just the relative coincidences of the case presented.

The effect of gravitation of the fluid envelope of the sphere to the centre of gravity of the earth's volume, and the possibility of the action of natural law, evoked under the varying conditions of the expanses of land and water upon the earth's surface, accomplishing changes in such centre, have been hitherto overlooked by geologists. Hence varied natural phenomena have been ascribed to hypothetical causes, instead of being generally admitted as the inevitable sequences of effect to be anticipated from changes so accomplished. J. E. Tennison Woods, F.G.S., in a recent scientific paper, admits, as do many other geologists, that change of the earth's axis, *if possible*, would meet the difficulty of accounting for the successive transpositions of sea and land, and zones of climate, disclosed by Geology, as having many times occurred; but he remarks: "We can see marine fossils at lofty elevations—2,000 feet, in

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* *Testimony of the Rocks.* See diagram, p. 27. † *United States Survey*, Nov., 1875.

‡ *Enoch Restitutus.* By Rev. Edward Murray, London, 1836. See page 66 and *ante*, on the comparison of the chronology of Enoch with the Hebrew computations.

Queensland, over present sea level—but who can see the axis?" Another geologist and scientific reviewer ridicules the hypothesis of accumulation of snow or ice in polar regions, pronouncing, arbitrarily, that such an idea is "a craze." But these reasoners, though probably learned in geological science, may not have studied some other branches of natural science, and hence may not have thought of searching for and tracing, link by link, the action of natural law in developing motive force by the mechanical laws pertaining to all matter.

It is at all times difficult, and more especially for an obscure colonial writer, to obtain fairly reasonable consideration for new ideas, calling in question the accuracy of previously entertained theories, even when their bases are becoming matters of doubt among men of science. The author has long laboured in the field of physical research, and during some fifteen years past has endeavoured, by submission of his papers to scientific societies, to obtain investigation by the science of the day of the data submitted of the traceable action of natural law, the necessary sequences, and the inferences deducible; but his efforts have heretofore seemed abortive. He now, at mature age, while his mental faculties remain unimpaired, desires to place his discovery on record, as *his*, assured that it will bear examination, and at some period, near or remote, be universally admitted as the truthful elucidation of some of the most important and abstruse phenomena, the mysteries of nature, and problems of geology and astronomy. He endeavours to demonstrate the continuity of the causes of past geological revolutions, and hence, inferentially, the certainty of their recurrence under existing conditions of the sphere we inhabit; the time when, as of the hour of our death, being mercifully concealed, and probably only known by the prescience of THE INFINITE.

CHAPTER II.

THE MYSTERIES OF THE PACIFIC ISLANDS ELUCIDATED.

A VERY interesting paper, entitled "A Mystery of the Pacific," has been culled from a recent number of *Chambers's Journal*, and circulated widely by insertion in several Australasian, and other journals and magazines. It relates to the mysterious origin of the colossal erections and images observable in Easter Island, the pyramids of Tongataboo and Tahiti, and other wonderful structures and rock carvings found in the Society Islands and elsewhere. The article concludes by expressions of sentiments inducing one who has studied this interesting subject, and tried to investigate the physical antecedents or causes still traceable in their operation in nature, which are calculated to furnish an explanation of these marvels, to submit the light his researches cast upon them. The article in *Chambers's Journal* (No. 225, October, 1882) states that "no adequate explanation has yet been offered, but . . . we seem driven to the hypothesis of an ancient civilization, extending over some parts at least of the Pacific. . . . A confederacy or group of tribes, who might by their joint labours have produced the mighty structures which now baffle the archæologist. . . . If there ever was such a civilization, which way did it spread? Was it from the west, or from the east? And in either case, how can we account for its spontaneous growth in such an isolated region, and under conditions so unfavourable? These are questions which we cannot hope to answer; probably they will always remain unanswered. The past history of the South Seas is veiled in deep obscurity."

The latter sentences especially invite my submission of the data upon which I based my "True Theory of the Earth,"* a work, but little read, though admittedly exemplifying great research. If I can demonstrate that there is every reason, from operation of natural causes tending *now*, as in former ages, to epochal change of the relative positions of lands and oceans, to regard the islands of the Pacific as the mountain summits of one or more former continents, the difficulty of conceiving how edifices, built of varieties of stone not now known to be available in the islands, and of structure far above the mechanical capacity of their present inhabitants, have been erected in these islands, will be at an end. At same time also, the elucidation may explain how, in all probability, America was populated with such a variety of races, emanating from eastern progenitors, who perhaps migrated across the continent of Atlantis, mentioned in Plato's Dialogue, of which the Canaries and Peak of Teneriffe may be the former mountain summits of the vast area submerged. The marvellous discoveries of an ancient civilization, replete with evidences of acquaintance with art, and practical application of machine-power, demonstrated in construction of the vast edifices on the banks of the Indus and Euphrates, and those of Central America and Egypt, &c., together with the relics of art exhumed in these countries, and in Ohio, Illinois, and others of the United States, from beneath loam-covered tumuli, would be explainable on the then reasonable hypothesis, that if causes in nature now exist to ultimately effect a transposition of the relative places of sea and land, similar causes may have produced same results in past ages. If this can be demonstrated, we may reasonably conclude that these relics *are* the works of an ancient race, or series of races of mankind, either wholly obliterated ages ago from the face of the earth upon which they formerly flourished, or saved, as Humboldt relates as the tradition of the origin of remotely separated families of man, upon mountain tops, from an overflowing deluge, which cut them off from all the implements used, and facilities for promptly re-developing the appliances of civilized life. Hence, such saved groups became "cave men," more or less capable of delineating upon their sheltering walls the drawings, or of fashioning the tools, or carving the relics, which being brought to light in modern excavations, are still a problem to the geologist; the food of these unfortunate refugees being probably the drifted carcases of animals of kinds indigenous to other lands, stranded by the seething oceanic convulsion upon the former mountain tops, then temporarily become islands. If my contribution of reasons for my beliefs on this subject does but insert the thin end of the wedge of doubt as to accuracy of by-past theories on imperfect data, or mere geological speculations put forth too often as ascertained facts, reconsideration of the question under the light cast upon it by the accumulating testimony of recent discoveries, may lead geologists and physicists to seek for and accept sound bases for a truthful and permanent theory. The natural forces I demonstrate, as continuously in operation, must produce effects, apparent—at least to observations at prolonged periods—as consecutive thereto. To trace evidences of these in nature now, and proofs of their occurrence in long past periods, though previously assigned by science to other natural causes, hypothetically, has been the task of research I engaged in, and would now commend to all zealous and indefatigable investigators of the scope of action of physical laws, and their consequences to any sections of the human family, whether at near, or very remote future periods.

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* *True Theory of the Earth, and Philosophy of the Predicted "End."* Published by Bell and Bradfute, Edinburgh, 1868; and an enlarged edition by Hutchinson, Melbourne, 1878. Copies may be had gratuitously by any scientific society providing for their transmission, by communicating direct with the author, Melbourne.

Scientific researches into the material history of our globe demonstrate that its external face or crust has "in the beginning"—a very remote primeval period—stood at a higher elevation, as regards altitude of its plateau-like elevations, now furrowed into mountains, above the present position. Facts, numerously certified to, demonstrate that land and sea have alternately changed positions; even the loftiest mountains yielding marine relics at points some thousand feet above the present sea level; and these are sometimes in such preservation, and of species still native to surrounding seas, as to foster belief that important alternations of position of the sea upon land have even occurred within comparatively recent periods, though there may now be hundreds of feet difference between former shore sea-levels and the present beaches. The belief is also induced that the mountains of to-day are probably but the indurated backbones of the skeletons of ancient plateaux, which, being subject to climatal precipitation (rainfall) and atmospheric denudation at one time, and to oceanic overflow at another, became torn into gorges and valleys successively, in which streams flowed towards the then existing ocean, bearing thereto the mechanically mingled and disintegrated earths of the various formations. The heavier portions of these, rounded more or less by long attrition in tumultuous torrents, have been deposited in the rocky grooves forming the river beds of each period, while the lighter part was borne away towards the sea. Thus, within each successive former surface, at various altitudes or depths, relatively to present sea level, there have been channels of watershed, containing waterworn mineral fragments, with particles of metal disintegrated from their matrices, or vein stones, just as we find demonstrated in our miners' successive shallow and deep leads, or those disclosed by adits in hillsides. But there are also other and alternating land surface evidences of oceanic overflow and recoil, when huge sections of mountains have been torn down, the previous river channels filled up, and new channel grooves—such as the wonderful cañons of the Sierra Nevada and Cascade Mountains—excavated, along the beds of which are deposited waterworn and rounded fragments of crystalline and metallic minerals, of naturally sharppointed cleavage, from the disrupted formations, as also a finer diluvium. In fact, the beds of the larger valleys have apparently grown up in altitude, while the mountain contour has become more and more furrowed into ravines, and their sides broken down. Vast plains have been formed by depositation of the denuded earths, intermingled with solid masses, forming a heavy sludge, densest at the bottom of the submerging waters. Such heavy deposits accumulate upon and around the bases of the harder rocky elevations, which, held together in substance by their indurated or crystalline formation, or intersecting bands, have not been completely broken down amidst the raging torrents. Again, the seething turmoil of the superincumbent water gradually abates. The water becomes clear. What change on the character of its first deposits has it made during this clearing process? The first is a spongy saturated mass, which becomes loose and porous when dry, more or less intermingled with solid particles of rocks, only partially disintegrated; while that more gradually precipitated from placid waters as they become clear, is of finely attenuated particles, closely compacted into a binding surface-covering to the successive deposits beneath, and of a nature much more impervious to water or atmospheric denudation.

Another cycle of Time's progress passes on, and again these sea-bottom surfaces become dry and elevated lands, within which these several operations of Nature are available for disclosure to view of intelligent observers, and the last alluded to are observable at the edges of every railway or road cutting, deep quarry, or mining shaft. The surface-binding deposit is evidently separate in character, and hence formation, as a deposit of finely pulverized earths, from the coarse, sludgy, and porous deposit beneath, much more easily affected by atmospheric agencies, and having intermingled masses of the softer rock formations, so disrupted by aqueous action, and thrown into confusion of the strike or inclination of their stratification, as to often present dissimilar aspects on the adjoining sides of a cutting, and thus disprove assumptions of their volcanic upheaval. Disruption by water in violent commotion cannot be a similar action to upheaval or eruption from the operation of distant volcanic outbursts, which would probably produce only a slightly waving parallelism of the strata affected, totally different in aspect from the disruption, slide out, or overturn of strata, undermined by water in motion.

The great valleys and mountain sides are profusely marked with parallel striæ, or terrace grooves, defining the relative heights to which either ice streams, the tumultuous torrents of an aqueous convulsion, or the tide action of a vast sea margin has attained. In many of the great valleys, and in mountain gorges, in Victoria, as also in many other parts of the world, vast masses of waterworn rock, termed boulders, have been hurled along, and stand piled on each other, loose from the rocky base. Geologists have traced evidences in Nature of some twenty-nine or more overwhelming submergences and preliminary deluges of invading ocean torrents, which have successively devastated, and again transformed, sections or faces of the earth's surface, as alternately submerged beneath a deep ocean for a cycle, and again and again raised far above previous sea level, and re-clothed with vegetation, inducing watershed by rainfall, and formation, on each successive surface, of channels for rivers flowing towards the sea. The practical miner of the Pacific Slope turns to profitable account this discovery of a series of successive surfaces, and attains, by boring or otherwise, information of the precise position of ancient channel grooves, often of vast dimensions and rich auriferous product. The miner of Australasia has only recently begun to realize the occurrence of ancient channel drifts beneath the high table lands of the mountains, or the beds of the great valleys or plains, extending north and south from the dividing mountain chains to the sea coasts, as at *several successive depths* from the present surfaces. He not infrequently expends large sums in boring or sinking *past* evidences of former surfaces, beneath strata he recognizes as precisely similar to successive surface deposits, until he pierces the third or fourth layer of basalt, each marking an alternate cycle of changes, when alone he (erroneously) thinks he has gone deep enough to strike a channel with deposit of auriferous drift. Each successive surface, however, had its easily traceable layer of former surface mould, affording sustenance to vegetation; and seeds and kernels of stone fruits and tree stems are very often found at varied depths, in a wonderful state of preservation, though alternating with fossilized beds of marine organisms, and beautifully perfect and delicate shells, heaped together *en masse.* Each former surface had also necessarily its channels of riverflow, varied by landslips, thus depositing ruptured rock, too often assumed by our miners as bed rocks, over former auriferous drifts. Recent discoveries of alluvial gold in the shattered slate rubble beneath Melbourne streets were suggested as probable by the author many years ago, when advocating, in the daily press, search by boring for ancient beds of the Yarra between the down-slidden slates of Collins-street and those of the Government Domain. The whole valley is a promising goldfield. *Vide* "Reasons Suggestive of Mining on Physical Principles for Gold and Coal," pages 48-9.

CHAPTER III.

THE CAUSE.

Now, what CAUSE in Nature's disclosures of the mode of operation of the laws of matter can be rationally assigned as capable of effecting these alternations of position of sea and land, with their concomitant results upon the composing matter of the earth's crust, and the living organisms upon it? Whence came the operating force? Has it present and continuous action, culminating in intensity to the occurrence of a devastating catastrophe, such as geological records disclose as having consecutively ravaged sections of the earth in bygone periods? Or is such force the result of agencies long slumbering, and rarely roused into fitful opportunities of development and catastrophic action? Again, have such catastrophes—which must have destroyed all animal life during their occurrence upon one section of the earth's crust—necessarily extended over the whole periphery of the globe? Or have some portions evidently escaped, and served to repopulate the globe, and its enveloping oceans, with organic life? These are the subjects of my research and investigation, and the discovery I claim to have made does solve these questions, and yields explanation of many of the problems of science, as well astronomical, as within the realms of Geology and Natural Philosophy.

Meteorologists have submitted hypotheses, deduced from extended observations, and generally accepted by acknowledged scientific authorities, to the effect that there are atmospheric currents at high altitudes, constantly proceeding north and south from the earth's equatorial regions, to their relative nearest pole; while lower currents of air, and the upper stratum of ocean surface, tend in a contrary progression, each seeking to fill the partial vacuum caused by rarefaction of their mass density, by tropical heat causing great evaporation from the sea surface, and elevation into the upper regions of the atmosphere of the attenuated air, loaded with finely comminuted particles of vapour. The air currents, progressing polarly, convey this vapour at high altitudes, its volume being continuously increased, as well by evaporation from the calm sea surface of the tropics, as from the areas of dense evergreen vegetation peculiar to the warmer latitudes, where lands are not glacial from altitude. Of this tropical vapour, a considerable proportion is precipitated as rain in and near the tropics, but the excess conveyed towards the poles, and receiving accessions from every evaporating surface *en route*, such as the large oceanic areas, is ascertained to be very great. Its amount yields the precipitation (rainfall), which, as registered, is found to increase in quantity in the ratio of distance from the tropics towards polar regions. And it is also noted by scientific observations, that precipitation from vapour at high altitudes is only induced by contact with, or contiguity to, refrigerating, and thus condensing agencies, such as the cooled atmosphere surrounding glacier-topped mountain peaks; and that the majority of land surfaces, not densely clothed with umbrageous vegetation, radiate heat, producing ascending air currents to high altitudes, and neither yield vapour largely, nor induce much precipitation locally.

Now there are extensive areas within polar regions where ice forms and accumulates; its bulk of mass ever recruiting by precipitation there, chiefly as snow, and but slightly wasted by thaws in summer, or the breakage and removal of fragments of the ice-bound land margins, which, as icebergs, fall into the environing seas, and are carried by the surface ocean currents towards warmer regions. In some sections of arctic and antarctic regions this diminution of the accumulations of ice thereat goes on continuously on a very large scale, and mariners traversing the route of these bergs towards the equator, in both hemispheres, have described the vast dimensions of bergs met with at sea. Those seen by the Australian clippers taking the "great circle" route to save distance by descending to cold latitudes, as also those so thickly studding the North Atlantic every season, until stranded or dissolved in warm latitudes, are often described as of vast bulk. What the weight of bergs so broken off the ever-accumulating masses within polar regions, may relatively be to the annual increase by precipitation, science cannot discover; but Lieutenant Parry estimated the weight of one aground in Baffin's Bay at 1,292,397,673 tons, being 4,169 yards long by 3,689 yards broad, and 57 feet over sea level. Another was computed to contain 900,000,000 cubic feet; and others have been noted as of even vaster dimensions, and these are but the fragments broken off the vast congealed volume. As regards the weight of precipitation in aid of ice accumulation upon such land surfaces as Greenland, and the north-western arctic shores of America, only a small portion of the area of which abuts upon an uncongealed sea, where it may lose fragments by eroding action of sea waves, there were statistics collected in 1867 of one snowstorm in the United States, which show an enormous weight of snow deposit. "The cloud covered an area of 1,500 miles by 300. The snow averaged one foot deep, and was estimated to weigh about five tons to the acre, or 3,200 tons to the square mile, or a grand total of 1,410,000,000 tons of snow!" Note, all this from one storm!

The continuous congelation, and hence accumulation of the rainfall (*i.e.*, also hail and snow) in arctic regions is only reduced by the brief summer thaws, and it has been noted that such thaws do little more in the *mer de glace* in the interior of Greenland than give a glassiness of surface to masses of ice, often there of mountain dimensions, which is reflective of solar rays, and thus renders the ice more impervious to wasting influences. Precipitation (or rain or snow fall) in arctic regions is manifestly greatest just at the edge of the polar circle, for it must be conceded that the continuance of vapour in the atmosphere within a frigid climate is practically impossible. It must be condensed, and fall as rain, snow, or hail.

In the natural configuration of the contour of either half of the earth's northern hemisphere, striking contrasts are observable as to prevalence of vapour-yielding areas, or their reverse, those radiating a dry heat, tending to currents of heated air ascending to the upper regions of the atmosphere. There are also notable contrasts as to an abundance or deficiency of lofty mountain summits, or densely timbered hills, which are observed to produce relative and very marked effects upon the amount of vapour raised, or being transmitted in the upper atmosphere by the polar currents. The tendency of these is to attract superincumbent vapour, and accumulate same into dense cloud masses, which at length are condensed by their cooling influence upon the adjacent atmospheric currents, or placid strata, and precipitate their contents locally. Let us observe such contrasting areas.

Delineating the northern hemisphere as upon two flat maps on Mercator's projection, having their respective circumferences between longitudes 110° west of Greenwich, and extending relatively east and west to 70° east longitude; observe now that on the western map, or that segment of it especially between longitudes 120° west and east respectively, there is the vast evaporating area of the Pacific Ocean, with very few peak points of local attraction to passing vapour, to induce a large rainfall between the tropics and Behring's Straits. On the eastern map, however, we observe the heat-radiating and comparatively vapourless area of the continents of Europe, Asia, and the northern part of Africa, upon which there are numerous mountain summits inducive to precipitation from [illegible] whether by the [illegible] or by these [illegible] atmosphere. The [illegible] physical conditions [illegible] volume acted on by [illegible] of condensing [illegible] vast volumes of vapour—[illegible] Pacific—&c., and *its* [illegible] segment of the Arctic Circle [illegible] currents radiating *polarly* [illegible] segment specially under consideration, [illegible] precipitation, and *the* [illegible] dense masses of ice in this [illegible] implies a largely *dispro*portionate [illegible] similar causes in the opposite, or eastern segment [illegible] Here the land barriers have *no* outlet [illegible] Behring's Straits, which only open during the brief summer [illegible] climate. With the lesser evaporation and precipitation in the eastern segment of the other half-hemisphere, or either of the two remaining segments of the whole northern hemisphere, each 120 degrees in width, is greatly diminished in volume, viewed as a congealed mass of dense material, or the continual offshoot of bergs, either of river-borne glacier formation, or as masses of the ice-bound shores, undermined by wave action. These bulky icebergs thence float off to the southward, impelled by the southerly currents of ocean surface, towards the warmer latitudes, so that there is manifestly a disproportion accruing between the gravity of accumulated ponderous material in the quarter north of the Pacific, and that amassing north of Europe and north-western Asia. The investigation of explorers of these bleak inhospitable shores fully demonstrates that accumulation of ice, even to the elevation of vast mountains, progresses during centuries, under no natural condition of diminution, but by river-borne glaciers, and the offshoot of bergs.

But a disproportionate accumulation of deposited matter, of great weight in proportion to its bulk, upon one segment of an equipoised sphere, resting in any given position upon the plane of her orbit, must affect the equilibrium of the sphere as regards the permanence of its centre of gravity; and hence, by mechanical law, its axis of rotation, as also of the angle of intersection of the plane of its equator—as perpendicular to the axis—with that of its orbit—the path of the sun, termed the ecliptic.

If the centre of gravity of the whole volume of the sphere be really affected, and demonstrable to be liable to a continuous change, in even the most minute degree, a chain of links of natural phenomena will be evoked, testifying to its occurrence, though only traceable in effect by observations at successively prolonged intervals of time. The water level at every point of the sphere's contour, must, to maintain its sphericity, be absolutely horizontal to a radius thence to the centre of gravity, and *vice versâ*—hence permitting no change in elevation of any section of that contour, *if* it be impossible to disturb the sphere's centre of gravity. Do researches in nature prove this to be now—and to have been in past ages—an unchangeable outline? Assuming that the sphericity of the earth's contour demands continuance of water level just as we find it at any given date, when calmly quiescent upon our shores, whence has arisen the noted changes of rise or depression of that water level available to demonstration in ancient beach margins, and on existing coast lines in every part of the globe? Either the land surfaces must rise or be depressed, relatively to the sea level, by some hitherto unexplained phenomenal force, which surely cannot act, and periodically *re-act*, in subversion of former action, by any natural law; or the oceanic envelope of the globe must be subject to redistribution of volume by the operation of natural law. But even if abstract facts denoted a sub-terrestrial action and re-action, in the alternate rise and sinking of land surfaces, there must necessarily be a re-arrangement of the volume of oceanic waters, consequent upon the displacement occurring by the rise of extended areas of land over sea level in one segment of the earth's contour, or their depression below sea level in another. The hypothesis of the simple obedience of the fluid envelope of the globe to the all-powerful law of terrestrial gravitation, when called into action by an evidently natural cause affecting the centre of gravity of the whole volume of the sphere, affords an intelligent solution of this problem presented to science. Accumulation—by operation of natural law—of ponderous matter upon one segment of the earth's arctic polar circle, in ascertainable excess of the quantity accumulated around the pole itself, or in any opposite arctic segment, *must*, in accordance with the law of gravitation, cause change in the centre of gravity of the sphere. Looking into the operation of natural laws, and tracing successively the links of observed results thereof, there can be no intelligent doubt of such accumulation, but certainly not at the pole, or centre of the arctic circle—for earth's vapours must condense and fall, before passing far within the outer edge of the climate producing condensation of air-borne vapour. The dense gravity of this deposit, as also of the simultaneous rise of level—that is increase of volume—of ocean waters in the direction indicated by the change of centre, or towards the north-western segment of the northern hemisphere, naturally causes the globe to tilt slightly on the plane of her orbit. This accomplishes an inevitable change of position of the earth's equator, relatively, to the ecliptic; and hence, as well as by the necessity, under natural law, that her axis shall intersect her centre of gravity, change ensues in the position, defined by stellar observations, of the parallels of the axis—the longitudes, as also of the parallels of latitude, with zones of climate. While the initial point, such as Greenwich Observatory, is deemed unalterable in longitude, all others deduced from it by computation of chronometer time, must remain in same relative position thereto, but stellar observations will denote discrepancies of position of their extensions into space at each successive definition, and assumed fixed zones of climate demonstrate a continuous rise or fall of temperatures respectively.

If such changes of stellar position are now or have ever been in progress, are they admittedly demonstrated? The science of astronomy denotes a recurring series of changes of an important character, which, though apparently recognized and understood by ancient philosophers, have, in this age, long been the subject of study and conjecture, and are still deemed mysterious problems of the science.

It has been noted that the opposite points at which the earth's equinoctial, and the ecliptic or plane of her orbit, intersect each other, which are called the equinoctial points, as at opposite extremities of the line of the equinoxes, are not stationary in position in the firmament, but recede along the ecliptic, contrary to the order of the signs of the zodiac, at the rate of a fraction over 50″ yearly, so that all northern constellations appear to pass to eastward of the extension of the earth's pole in the firmament, and are thus said to attain an increasing longitude. This, together with the diurnal tidal wave phenomena, has been currently ascribed to the action of solar or planetary attraction of an assumed equatorial bulge of the earth's volume—a theory based on wholly unproved and merely conjectural hypotheses. The continuing variance from period to period of observations of each definition of approximate parallelism of the equinoctial and ecliptic, may now be intelligently referred to the tilt given to the globe as she rests on the plane of her orbit, by the leverage of an ever-increasing and disproportionate weight of ponderous matter upon a segment of her northern hemisphere, and its aggregation, not at the polar apex, but chiefly upon what, by our maps, we term the south-western margin of the arctic circle. Not only is the effect produced by a direct leverage, but by change necessarily of the centre of gravity of the earth's volume, implying alteration of the line of her axis, which must intersect that centre. Hence, however imperceptibly to ordinary local observations, and only traceable by stellar observations at prolonged periods, the parallels of latitude, including the equator, with their perpendiculars the longitudes, must be deflecting from their former definitions of charted position over the earth's surface. .

Hence we believe that we have a solution of the problems of the Precession of the Equinoxes, and of the Oceanic Tides, both previously referred to an assumed and apparently unphilosophical theory of a solar or planetary attraction of a supposed equatorial bulge on the earth's contour, such bulge being wholly irreconcilable with the action of terrestrial gravitation demanding sphericity of sea surface. Tidal phenomena appear to carry out by a gentle pulse-like vibration, or mild earthquake shock, the transmission of films of ocean surface in redistribution of volume, necessary by recurring or continuously progressive changes of the centre of gravity, the outflow being towards the direction of the change of centre, thus requiring re-adjustment of superficial equilibrium. And these waves gather in volume as they roll, and their undulations evoke into action a succession upon their course, until checked or recoiled by land margins, or opposing surface currents from the equator; the diurnal outflow and recoil, causing high and ebb tides, being probably controlled in their synchronism, though not primarily induced, by lunar attraction.

CHAPTER IV.

THE RESULTS.

THIS solution casts light upon those problems of current geological science, which have disclosed abundant evidences that most known countries have alternately occupied varied positions of elevation above, or depression beneath deep oceans; and during elevations, alternated in climate from tropical to glacial, through every intermediate temperature, inducing development of organisms peculiar to each as brought to light in these last days by geological researches. The ancients, probably, had not such evidences of the recurrence of convulsions during the antiquity of the earth; but that some races of man did apprehend desolating, if not ocean-submerging catastrophes, destructive to a section of their race and their records, is evident from the massive character of their public edifices, and their positions, as placed chiefly upon the highest points of their lands. Of this kind are those wonderful edifices in Easter Island, in the South Pacific, where Miss C. F. Gordon Cumming, an eye-witness, testifies to observance of "cyclopean platforms at intervals all round the coast, from two hundred to three hundred feet in length, and about thirty feet high, all built of hewn stones five or six feet long, and accurately fitted, without cement. Above these, on the headlands, are artificially levelled platforms, paved with square blocks of black lava. On all these, stone pedestals remain, whereon were placed the great images, which, by some powerful force"—probably overflowing ocean currents—"have mostly been thrown to the ground and broken. The average height of the figures is about eighteen feet; some of those lying prostrate are twenty-seven feet long, and measure eight feet across the breast. Ponderous crowns of red lava, hewn perfectly round, some of which are thirty feet in circumference, still lie in the quarry whence they were hewn, fully eight miles distant." "Others have been placed in position," on the heads of the images. "Well may we marvel by what means those unknown sculptors transported their ponderous works of art from one distant point to another on this lonely volcanic isle. The statues are literally lying about in hundreds, and the very rocks on the sea beach are carved into strange forms—tortoises or human faces. There are, besides wooden tablets covered with hieroglyphics, also stone slabs covered with geometric figures, curious birds, animals, and faces, painted in black, white, and red. Doubtless these also are hieroglyphs. They are ranged inside the quaint stone houses, of which about a hundred remain at one end of the isle—Easter Island. These are built in lines, with their doors towards the sea; the walls are about five feet thick, built of flat stones, laid in layers. Unless the face of the island has undergone some wondrous change, these mysterious workmen could not even have possessed wooden rollers to aid them in the toil of transport, for there are literally no trees on the island."

"At Paparra, in Tahiti, there is a stone pyramid 267 feet long, by 87 feet wide, standing on a pavement measuring 360 feet by 354 feet; the height of the pile, 44 feet." Who can now doubt that such remains, in similar isolated spots, evidence that these are but relics of early races of civilized man passed upon the highest portions of formerly existent large areas of inhabited lands now submerged. Speculations as to the workmen having only flint tools are far-fetched and absurd. Influences of weather corrode and gradually decompose all iron articles, so how can we so positively affirm that prehistoric man did not use iron tools! The percolation through submerged early formations, of the concentrated saline waters from a sea confined amid a glacial climate, where its liquids and less saline portions rising to the surface are successively congealed, appears, from novel experimental results, to effect a solution of vein material and metallic atoms therein contained. Such solution, or the pasty mass so permeated, exposed thereafter to magnetic currents, or crystallizing, or consolidating agencies, appears to have evolved the fluid mass—as well a solution of metals as silica—of the siliceous veins, forming the matrices of the metals in rock formations. The author has recently urged upon the Victorian Mining Department the expediency of obtaining analyses of the mineralized waters in which quartz lodes—more or less honeycombed with empty cells, and denuded of gold near the surface—appear, when immersed below water-mark, of compact structure, and abundantly permeated with gold and pyrites. Chlorine is now used as a solvent of finely comminuted particles of gold at our pyrites works. In the natural crystallization of rock salt (which the author has submitted to science as the submarine product of a glacial sea, and hence, *in situ*, a proof of such climate having prevailed locally), an excess of chlorine may have been liberated, adequate to dissolve all metallic substances exposed thereto, which again may have been, by electric action, concentrated in deposits in the matrix veins, or in aggregated masses within drifts. Hence it is vain to look for discovery of metallic heads of tools in use in prehistoric eras, but their non-discovery is, *per se*, no proof that such were not in use. The magnitude of the cut stones hewn out of the rocks, transported and elevated to their place in the edifices discovered, preclude the idea of either inferior ability or mechanism being alone within the ancient workmen's resources.

The late Sir Roderick Murchison remarked that "the commencement of the first glacial period in the history of the Alps was coincident with a vast change in the level of materials constituting the then existing lands and their *débris*, which had previously lain beneath the waters; and of same date as that which submerged a pre-existing northern continent, and brought it under the influence of a glacial sea." Cuvier observed that "if there be anything settled in Geology it is this, that the surface of our globe has been subjected to a great and sudden revolution; that that revolution broke down, and made to disappear the countries which had been before inhabited by men and animals; that, on the other hand, it laid dry the bottom of the immediately preceding sea, and formed the countries which are now inhabited. But the countries now inhabited, which had been laid dry by that last revolution, had been inhabited *before*, if not by man, yet at least by land animals. It follows that preceding revolutions—one, at least—had buried these regions beneath the water." Cretaceous—containing sea shells, sedimentary, and drift formations have been found on lofty elevations in nearly every part of the known world geologically examined; coal of good quality has been found 4,500 feet above sea level in the western range of the Sierra Nevada. The author has submitted the hypothesis that coal, viewed as silicified masses of vegetable origin, has been deposited chiefly in estuaries, or amphitheatre-like basins of former sea bottoms, from submerging ocean waters, subsequently covered by earthy depositions, and the whole, under enormous pressure, permeated by intensely saline diluents, containing silica or lime in solution, which ultimately concreted the several layers of deposits, with their enclosed veins. Wood in unchanged appearance has been found mineralized by soakage in silicious water. The vegetation consolidated in the coal measures much more resembles the stems and fronds of marine plants, and probably only such could be compressed into masses forming layers, sometimes many feet in thickness. Had land vegetation and tree trunks and branches been compressed together, the mass would have presented a marbled appearance, from its intersection by streaks of earthy incombustible matter, and be quite different in aspect from the homogeneous character of coal veins. The coasts of Tierra del Fuego, and certain areas in the Indian and Pacific Oceans, produce extraordinary rank growths of submarine vegetation, in the floating tangle of which ships have been becalmed. The strange types of reptile-like animals, or forms, half-seal in body, though quadrupedal, or as anomalous in structure as if half-bird and bat, may be still extant in nature, and feeding in these sea-bottom meadows, or flitting amidst the branches of the gigantic palm-like foliaged submarine trees, ascertained to reach a length of 1,500 feet or more, from root to extremities on sea surface. Who of our modern geologists can divine, from fragmentary petrifactions, or fossil skeletons of these forms of animal life, whether their organs of respiration differed from those of the seal or the platypus, or cetaceous animals, as able to support life below water as above it? The author has elsewhere suggested boring for coal in depressed basins or swamps, which may owe their depression of surface to subsidence of compressable layers of material.*

The continuous action of the agency in nature herein traced from its initial point, in development of a *force* or motive power of vast consummating results, points to the absolutely necessary sequence of just such alternations in aspect of the earth's crust as Geology has disclosed. Again and again culminating catastrophes have opened up or depressed ocean barriers, and poured their torrents of desolating waves to submerge continents. Yet throughout all such convulsions as yet traced by science, sections of the globe have been the abode of many varied forms of organized life, apparently exempt at that era from visitation of an inroading sea, which must have destroyed as well fresh-water life, as all formerly indigenous to the submerged areas of land. Again and again, many times in the vast antiquity of the globe, however, each known surface of the earth has been subjected to oceanic submergence, at one time tumultuously denuding, breaking down, and disintegrating portions of vulnerable formations, and spreading the saturated *débris*, so as to gradually fill up low levels, whether in the sea-bed, or in earlier excavated grooves in, or between indurated rock masses. Again, and again, also, many times, have land surfaces formed of denuded earths and rocks, and overspread by deposits of the finer particles from a quieting sea, called mould, or surface soil, become covered with forms of vegetation, and been gradually rendered fit for occupation of animals or man. Beneath such successive surfaces, the science of Geology has also disclosed traces of the massed accumulation in drift of—in one place, swarms of fish, apparently suddenly deprived of escape from danger, and death, amidst aggregated thousands. In another place there may be similarly accumulated fossil carcases of a vast variety of the animal creation. Even the ice-bound shores of Spitzbergen, and the frozen mouths of northern Siberian rivers, have furnished proofs of ocean-borne drifts of carcases of animals of ancient type having been swept from land surfaces to their now enfrozen beds in drift formations. These are in such preservation as to demonstrate that their destruction and aggregation within the congealing influences of a glacial climate, was too sudden and rapid to give time for even partial decomposition. The hypothesis that animals so aggregated where found, and of known herbivorous nature, were indigenous to an arctic climate, scarcely yielding vegetation for a few reindeer and alpine hares, may well be reconsidered. Their aggregation *en masse* implies removal by an aqueous catastrophe—query, whence? The natural sorting of grouped matters of naturally wide diffusion, on sea beaches, points to the similarly wide diffusion of such organizations.

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* *Reasons Suggestive of Mining on Physical Principles for Gold and Coal* (Melbourne, 1875), page 46.

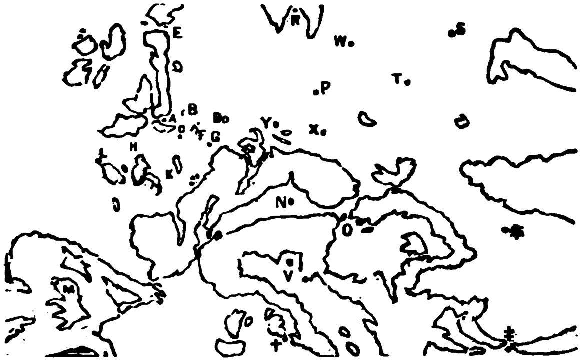
While such evidences are, in noted localities, demonstrative of sudden catastrophe, and violent aqueous action, evidences are also disclosed by Geology, demonstrating long continuations of a state of comparative placidity, and absence of any violently disturbing agency—*i.e.*, in active operation, on the earth's surface. This may result from the primary inertia of the new equilibrium established by each successive catastrophe, presenting obstacles to change of the centre of gravity, by the relative action and counterbalancing reaction of the operation of natural laws; or the extreme placidity of a progress towards change of centre of gravity, when in initiatory stages. The configuration of the areas of land surface on the earth's contour may not then as now have presented, according to Maury, "twice as extensive an area of heating surface, yielding evaporation, on the north side of the equator, within the torrid zone, as there is on the south side." If equalizing aspects are presented primarily in both hemispheres in such respects, a comparative quiescence of nature's forces would continue until conditions changed.

Again, the long continuance of slowly alterative movements, barely perceptible by alteration of tide levels on sea shores, or by demonstration of changes in the obliquity of the plane of the earth's orbit with reference to the previously assumed equator, may readily be interrupted by apparently adventitious causes, and thence inaugurate periods of catastrophic activity, productive of desolating and renovating influences upon the earth's crust alternately. The pulse-like action of the diurnal oceanic tides, in transmitting undulations of sea surface from sections of the earth's contour, where the altering centre of gravity renders its volume redundant, towards other sections, requiring increase, in adjustment of the slightest alteration of equilibrium, appears to be regulated by Him figuratively declared to "weigh the mountains in scales, and the hills in a balance." The tides apparently act by their regularly recurring flex and reflex, as Nature's safety-valve governor, in restraint of all minor causes of convulsive action. But as sea levels rise upon some shore lines, their ocean barriers seem relatively depressed, until at length entry of oceanic waters is obtained to inland depressions of surface, such as the supposed ancient sea beds of the African Sahara, the salt deserts of Arabia, or the Great Basin of Central Asia. The result of such accumulation of water in abnormal positions, might react in confirming or reversing the progress of existing changes; a desolating catastrophe might ensue, accomplishing the re-configuration of the areas of land and sea, ushered in with appalling calamity to the races of man, or animals, exposed to the inroad of the raging waters, or the ensuing submergence thereby. Families of mankind, saved amid such horrors of overwhelming deluge, would thenceforth date their history, when struggling, in lonely isolation from the rest of the human race, as in Easter Island, to regain their lost comforts, and arts of civilization, from the period of their succour upon a mountain top. That, as a lone sea-girt isle, might be thereafter, for a cycle, the only remnant of a former continental area, more or less populated. The climate, local productions available, varieties of food, materials for tools, and other conditions of deprivation, might be adverse to a return to that family's former course of life, as in an advanced state of intellectual culture. Their first abode might very probably be in caves, on the walls of which they might have skill to depicture common objects of memory of their former life, some discovered seeming as childish as any schoolboy's work on his slate. Their food might be stranded carcases of animals swept from the submerged lands—no proof that subsequently found fossil specimens of these were there indigenous. The position of such unfortunate human beings would speedily become as abject as their locality was isolated. Like shipwrecked passengers on inhospitable rocks, such as the Auckland Islands, their tools and implements would be fashioned out of stones, bones, wood, or coral; and eventually, as cut off from all succour by their former nationalities, they might adopt all the rude characteristics of the lowest type of the Polynesian savage.

Researches in Geology disclose that the shores of West Greenland, Kamtchatka, Eastern Siberia, besides others, are "sinking," that is, the water level is rising on them; while those of Northern Europe, the Baltic, and Australasia, are evidently rising—the sea volume there shallowing. Hitherto, deductions from local observations of such changes of sea level have been tempered with impressions as to their result from volcanic upheaval, or some other improvised tendency to alternately rise, and be depressed, by intermittent motions. Hence, variations of ancient beach levels, of successive eras, may have been confounded with more recent evidences of a present continuous progress in one course of action. There has been no real interest taken in tracing the continuity of these apparent movements in one direction.

The fragmentary masses of floating ice mentioned at pages 16-17, with their estimated weight, may appear too insignificant to yield an impulse towards a change of the centre of gravity of so vast a body as our planet. But a preponderance of weight on one arc of surface, and its withdrawal from another, must affect the centre of gravity. The water level follows the direction of change, and by its shifting volume, not only marks, but maintains the change, or rather helps to increase it. As regards the masses of ice displaced from northern regions, and which have at times actually reached the Azores, Scoresby "counted over 500 bergs, of altitudes of several hundred feet, drifting along in latitudes 69° and 70° north, some of them a mile in circumference." Masses of concreted bergs have been met with by vessels sailing between Canada and Europe of such vast dimensions as to seem a perfect ice barrier. The *Home News* of 26th April, 1867, stated that "one vessel had to sail nearly 200 miles southerly alongside a perfect continent of ice, while others passed icebergs of enormous bulk." The submerged portions of these bergs being six to eight times larger than the part visible, their corresponding weight must be enormous, hinting as to the fact of a change of centre of gravity, which the redistribution of the oceanic volume confirms, with sequences of other natural phenomena. There are doubtless similar movements progressing in the Antarctic ocean, but, so far as science has ascertained, there is no impediment presented by a similar want of outlet for bergs to the open sea, as is presented within the north-western segment of the Arctic circle. It is to be lamented that so little is known of Antarctic shores, upon which might possibly be found a race of man once removed from a more temperate clime by the forces denoted, and also relics of their former civilization, and remains of an older world, drifted thither as the mammoths to Siberia, and similarly preserved. The North-west passage is now threadbare of interest, while the Antarctic is quite unexplored and unknown. Surely, its shores could be reached at some point with safety.

The links of this discovery of a cause of production of a natural force, and its operation in nature, can be traced readily enough now, though the effects, where previously noted, have been heretofore currently ascribed to other causes, or are still held by some savans as problematical, and open for scientific elucidation. The oft-noted inconsistencies between the early and more recent definitions of positions at sea, as to latitude and longitude, are probably only the inevitable result of the now altered axis, and tilt of the sphere on the plane of the ecliptic, consequent on the continuous exertion of the force disclosed, and its necessary effects. The noted overlapping to an ever-increasing degree, of each periodical definition of the 141st degree of east longitude upon the territory of Victoria, and the consequently renewed claims for re-adjustment of boundary eastwards by South Australia, were several years ago anticipated by the author, and the attention of the respective governments directed to the actuating cause. The events have proved his prognostications correct; but new definitions on this point, as well as recent observations as to the incorrect position of coast lines, or reefs, as charted by early navigators, are still usually set down to the score of former inaccuracies of observation, or assumed inferiority of instruments. The noted changes of surface sea level on the coasts of Australasia, very evidently increasing as they are, coupled with the disclosure of numerous belts of ancient shell beaches at very varying altitudes, call for greater attention than the subject as yet obtains, and the introduction and periodical inspection of rock-based tide gauges.



SKETCH OF EXTENT OF SUBMERGENCE OF WESTERN AND CENTRAL EUROPE, DURING GLACIAL EPOCH.

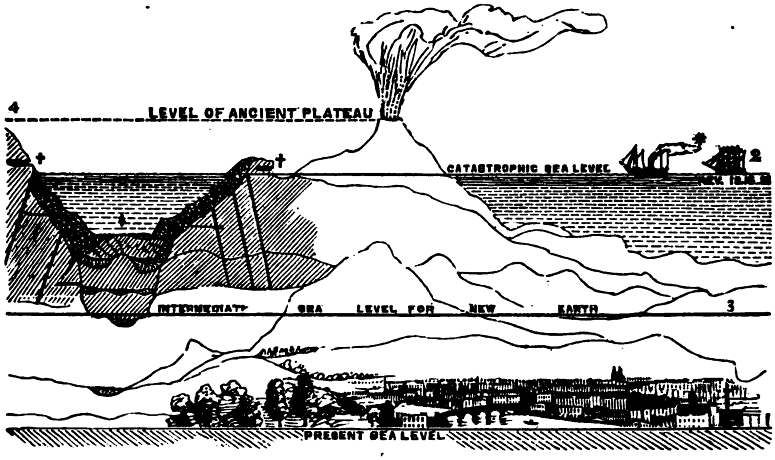
Reference to position of sites of existing European cities, then submerged by ocean, or inland seas :—

A	London.	G	Brussels.	O	Vienna.	W	Stockholm.
B	Yarmouth.	H	Cherbourg.	P	Copenhagen.	X	Berlin.
C	Margate.	K	Paris.	R	Christiana.	Y	Hanover.
D	Amsterdam.	L	Brest.	S	St. Petersburg.	‡	Constantinople.
E	Edinburgh.	M	Madrid.	T	Riga.	†	Rome.
F	Calais.	N	Munich.	V	Venice.	*	Odessa.

CHAPTER V.—IN CONCLUSION.

THE SUBJECT VIEWED AS ELUCIDATORY OF OBSCURITIES IN SACRED PROPHECY.

"All are but parts of one stupendous whole,
Whose body Nature is, and God the soul."—POPE.



AN ASSUMED DIAGONAL SECTION OF PEOPLED LANDS.

1.—In the foreground is the site of a populous city, on sea level, submerged by gradual reconfiguration of ocean volume, converging to a varying centre of gravity, or by sudden catastrophe, during a secular geological convulsion.
2.—The ocean overtops all but the highest mountain peaks.
4.—Contemporaneously, as Geology discloses, some mountains then revive long slumbering volcanic energies.
*—Mariners arriving, as in vision to the prophet Ezekiel and St. John in Patmos, over site of submerged city, obliterated from view for ever, "to be found no more at all."
‡—Ancient water courses of each successive surface, during geological epochs, alternately depositing water-worn *débris* of formations, with their metalliferous veins, on bed rocks, and again covering these by land slips, diluvium, or sedimentary deposits, forming new surfaces, each having its channels of watershed.
†—Sites of refuge caves for men and animals in the tops of the then mountains, whence human survivors have emerged to re-occupy their country, either changed in configuration as a New Earth,
3.—Or become one, or an archipelago of islands, with every trace of former civilization, save massive edifices, swept away, or covered with sedimentary deposits. Hence, survivors, "cave men" in small groups, degenerated to the debased position of the Polynesian islanders, not even retaining traditions of early history, or, as other peoples, mentioned by Humboldt, do, of their succour during a devastating deluge, on tops of mountains.

THE late Rev. Dr. Chalmers, in his Astronomical Sermons, forcibly pictures the dire catastrophe to sections of the earth's crust, the family of man, and all species of organized life, if by some sudden and wholly unexpected cause, the polar axis of the earth was violently changed. A convulsive loss of equilibrium of a globe surrounded with an ocean, only restrained within limits by low elevations of land barriers, would eventuate in a complete change in the relative positions of its oceans and continents, with also changes of climates, glacial, temperate, and equatorial, thenceforth for a cycle. The first effect would be probably that forcibly depicted in the visions of sacred prophets, such as that the stars of the firmament would appear to fall from heaven, the atmosphere be darkened, the sun appear as obscured by sackcloth of hair, and the moon as blood. Then rivers and streams of water would rise upon at least the shoulders of high mountains and hills* from oceanic outburst, inducing ruptures of formations, landslips, vast denudations, with disintegration of mineral veins and rocky hill structures. The *dêbris*, disseminated through the surging waters, carving out new valleys beneath disrupted mountain gorges, and devastating and overwhelming all previous evidences of man's industry, would gradually deposit its constituent matter as sedimentary strata, to the complete obliteration of the previous features of land surfaces. In the forcible words of the sacred Scriptures, pourtraying a vivid vision of the calamitous events of the "time of the end"—after the cause is denoted in these words: "Hast thou entered into the treasures of the snow, or hast thou seen the treasures of the hail, which I have reserved against the time of trouble, against the day of battle and war?"—the *I* is the Author of Nature and the Word, "Behold waters shall rise up out of the north, and shall be an overflowing flood, and shall overflow the land, and all that is therein—the city (that is, place, or places of concentrated population) and them that dwell therein."† "The sea is come up upon Babylon; she is covered with the multitude of the waves thereof." "I will make thee a terror, and thou shalt be no more; though thou be sought for, yet shalt thou never be found again." "The end is with a flood and desolations." "Those that escape shall be upon the mountains," "in the tops of the rugged rocks," the last place to seek safety, except from flood. Also, mariners from other quarters of the globe shall arrive in ships, sailing over submerged positions of former populous countries, to which there is now apparently "no house," or seaport town, "or entering in," or harbour. The vision then passes on to describe the aspect of the renovated earth surface, and its new climate—perhaps that of a perpetual equinox, or coincidence of the planes of the equator and ecliptic, with only polar oceans—yielding conditions of extreme fertility; and narrates as to "the nations of them that are saved" from the fearful catastrophe, some of which have, in remote portion of the globe, perhaps, seen no indication of its occurrence, except possibly disturbance, temporarily, of magnetic currents, or of adjacent sea surface. The vast destruction of life consequent in overwhelmed countries, and the drifting off, and aggregation of dead bodies in a great valley, with their subsequent systematic burial during "seven months," with many other corroborative narrations of events inevitable to the occurrence of another geological convulsion, such as has devastated sections of the earth many times in past ages, without destroying wholly either man or the animal creation, are vividly depicted in the writings of the Sacred prophets, and constitute one evidence of their Divine inspiration, and hence literal signification, being written not to mystify, but instruct Biblical students.

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* Bible readers will have no difficulty in finding the passages referred to here in any Concordance.

† Geology discloses evidences of past oceanic overflow as proceeding from the north and south alternately, and the last traced from the south.

The author now submits this attempt to elucidate the mysteries of the Pacific, narrated in the papers quoted from. The evidences of the transposition of sea and land, traces of ancient civilization in massive erections, as also works of utility and relics of art, are becoming very abundant; and, viewed in the light his researches and discovery cast upon their origin and history, may be studied with new and ever increasing interest. The successive developments of fulfilments of prophecy are especially subjects of great interest, because therefrom we may deduce approximate evidence as to the time when the prophetic visions shall be verified by a now looming, appalling, physical convulsion—preceded, probably, but almost simultaneous with a frightful earthquake, desolating the aspect of a vast area of populous lands, as Ischia is now depopulated.

There is still much to be fulfilled in Sacred prophecy, as signally demonstrative of a Divine Authorship, as the fulfilments noted in records of Jewish history, of earlier prophecies relating to the calamitous punishments of that stricken nation. Prior to the time of the "end" an outbreak of desolating forces, apparently as well supernatural as natural, will destroy, break up, and submerge sections of the earth. Internal chemical combinations of salts, with emanation of inflammable materials or gases, may rouse long dormant volcanic energies into play. The external features of sections of the earth may be so altered, as that its former outlines "shall not be remembered, nor come into mind." Existing lands may be submerged; anciently known continents, containing, as their mountain tops, the lonely islands of the Pacific and Atlantic, may rise into view, by the rearrangement of the waters of the surface of the globe, with reference to an altered centre of gravity. Gradually, quiescence of the disturbing forces in nature will supervene, and the advent of a New Earth be accomplished, whose fertility under the balmy climate, perhaps, of a perpetual equinox, or free from extreme vicissitudes, shall be wondrous to contemplate. Amid the horrors of the convulsions that initiate and accomplish this change, races of mankind shall be saved, as in former catastrophes, some of them being depicted as unaware of the vast calamity, and lamenting, from prince to pauper, for the dire destruction brought about, as soon as tidings thereof reach them, of populous cities and sections of continents being buried many fathoms deep, "to be found no more at all."

But before consummation of these dire catastrophes, there are to be notable incidents, so remarkable in the literal accomplishment of the Sacred prophets' delineation of their visions, as to nations and kingly powers of earth uprising to effect great political changes, that those Biblical students, who may zealously trace their connection with fulfilments of ancient prophecy, will be made as "the wise," who, it is stated, "shall understand," and foresee, in a measure, the maturing of the times appointed. The great Northern power is to sweep with a vast army over southern provinces, overflowing and passing over. Having attained the site by conquest, the "robbers of my people" are to set themselves to "establish" or bring about the fulfilment of the prophetic "vision," that there shall be a highway between the seas for ready access to Eastern dominions. France may retain her Suez Canal; England have a similar means of transit in her own right, but the way of the Kings of the East will probably be by a broader channel between the Mediterranean and the Red Sea, *viâ* the Valley of the Jordan and Dead Sea, which is alleged to be greatly below present sea level, or by utilizing the Euphrates River for navigation. In proximity to the northern sea mouth and harbour, the great Northern king will "plant the tabernacles of his palace on the glorious holy mountains" of Palestine. Escaping from treason, sedition, and treachery of even trusted nobles in his northern capitals, he shall hope for peace and renewed prosperity for his empire, while governing his vast dominion from a point of vantage "between the seas." Yet, alas! the Sacred prophet discloses the vanity of his hopes for long-continued life amid circumstances of aggrandisement. That wonderful prophecy also has yet to be fulfilled—"I gave Egypt for thy ransom, Ethiopia and Seba for thee." Palestine is to be unmistakably set apart for the concentration of a Jewish nation therein, to whom, by universal acclamation, all the social and political advantages of a free and independent people shall be ceded in perpetuity. There are many other interesting details of inspired prophecy, the literal fulfilment of which, when once the key is perceived, may be watched with deep heartfelt interest by the well-read christian, not ashamed to own his belief in the inspiration of the Sacred Scriptures, the national reverence for which has been the secret of England's supremacy among the nations.

The decadence of the nation until the prophetic time when "the power of the holy people shall be scattered," may be traceable perhaps hereafter from the legislative and general contemptuous treatment of the inspired Word of God, and its prohibition from State-school education.

A manifesto was drawn up and subscribed at the meeting of the British Association of 1865, in London, by 617 scientific men there assembled, many of them the highest known authorities on scientific questions in the world, which manifesto was then lodged in the Boadleian Library at Oxford. It affirms, *inter alia,* that "We conceive that it is impossible for the Word of God, as written in the Book of Nature—and God's Word written in the Holy Scripture, to contradict one another, however much they may appear to differ. . . We believe that it is the duty of every scientific student to investigate nature, simply for the purpose of elucidating truth." But practically, science, unfortunately, rarely consents to accept any scriptural elucidation, or attested confirmation of the mysterious workings of natural law in furtherance of developing sequences, deeming reference to such wholly out of place when named in connection with scientific researches. And yet, when carefully studied, the Sacred Book yields numerous indications that the ancient writers understood more of natural science than we commonly give them credit for, even admitting that the finite penmen employed to place on record their sublime visions of still future events, carried out an impulse of their human frailty sometimes, and explained their own interpretations as solely applicable to such past occurrences as for instance the Israelites' passage through the Red Sea, or other events noted in the early records of Jewish history—thus amply demonstrating that they were but the honoured amanuenses of a Divine communication beyond their mental grasp. The continuous preservation in the revised issue of this wonderful Book of some of the early historical myths, such as the Eden legend, or that the sun stood still at the request of Joshua, in lieu of the fact, attested by the circumstances the narrative discloses, that the early dawn was obscured by the rising of an appalling and destructive thunderstorm, is to be deprecated as impairing its position as an inspired and truthful record of past and still future events.

In the "True Theory of the Earth and Philosophy of the Predicted End," at pages 158–62, the author suggests that the vast hostile army from "the rising sun"—which dogmatic theologians consider metaphorical in all details—"appears to originate within Corea, or possibly China, aroused for purposes of assault and loot of the wealth of western cities." The French contest there now may prove the instigating cause, by arousing a consciousness of power in these heathen nations. Inspired prophecy, in its fulfilments, demonstrates its supernatural origin, and hence the Divine authorship of the Word. The journey westward of this vast assemblage is clearly pictured therein; and "at the great day of battle and war," "the treasures of snow and hail," quoted above, will, as in former epochs, be permitted to subvert the oceanic equilibrium and usher in another desolating geological convulsion, the sequel to which is the "New Earth;" but there is nothing new under the sun in Nature. What a commentary on the folly of some of the dogmatic and unscientific crudities taught in the present day, by assumed authorities in church and schools, is Solomon's retrospect of his discoveries in Nature, given in the first chapter of Ecclesiastes! In his inspired wisdom he declares that "the earth abideth ever;" "that which is done, is that which shall be done;" "that which hath been, shall be." "There is nothing new" in operation of natural laws; and these, while controlled providentially, are never suspended from operation, so as practically to thwart the designs of the Great Designer. But the enunciator of truths meets with scant support; therefore, "in much wisdom is much grief."

FINIS.

Walker, May and Co., Printers, Mackillop-street, Melbourne.

Dedicated

TO THE BRITISH AND FRENCH ADMIRALTIES,

As believed to be Foremost in Investigations as to the Possibility of Change of the Earth's Axis, its Degree, and Direction, Necessitating Reconsideration of the Methods of Defining Latitudes and Longitudes at Sea, with the View of Ensuring Greater Accuracy in the Future, and Accounting for the Apparent Change in Positions Defined by Early Navigators, in Interest of Life and Maritime Prosperity, these Deductions, upon a Long-continued Series of Researches in aid thereof, are respectfully dedicated by the Author.

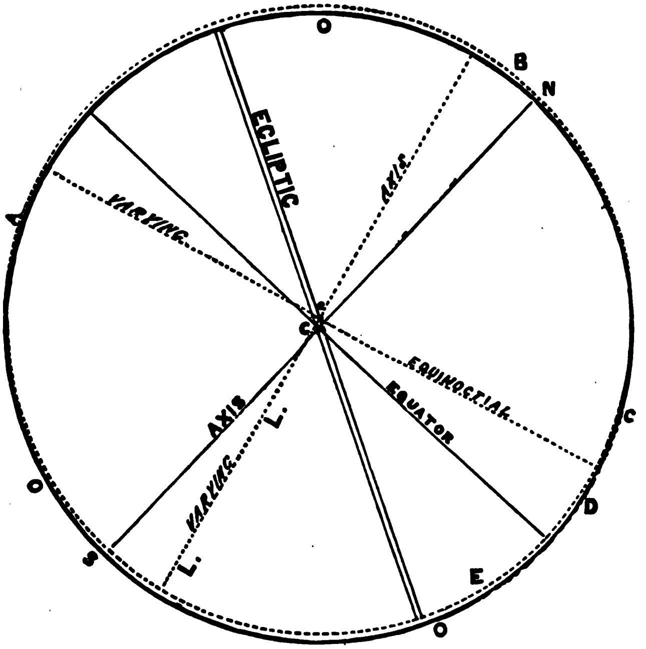
The Proposition sought to be Established is that Certain Natural Phenomena, in Continuous Occurrence under Existing Physical Conditions, operate to render a Fixed Position of the Centre of Gravity of the Earth's Volume practically Impossible. Hence, by Mechanical Law, the Axis Intersecting it must Change, presently Altering the Initial, and all Definitions of Longitude, Westerly in the Northern Hemisphere, and Easterly in the Southern, with Varying Points of Intersection of the Defined Equator, and its Parallels of Latitude. Hence, that these also Vary in Degree of Approximation to the Plane of the Ecliptic, intersecting it at Continuously Changing Points—thus elucidating the Problem of the Precession of the Equinoxes, and concurrently, as Gravitation Necessitates Redistribution of Films of the Oceanic Envelope, the Motive Force evoking the Oceanic Tides.

It is here in Victoria a Locally-ascertained Fact that the 141st Degree of East Longitude, the Defined Boundary of South Australia with Victoria, appears to Overlap into Victoria, to an Increasing Degree at each Successive Definition at Prolonged Periods; and this Result was foreseen and communicated to the Respective Governments by the Author prior to any of the Later Definitions which led to Repeated Applications by South Australia for Re-Surveys and Re-Adjustments.

The Demonstration is not that of an Enlarged Circum-Polar Ice-Cap, which has become a Scare of the Subject to Science, but that Natural Causes result in Change of the Earth's Centre of Gravity, and Terrestrial Gravitation then necessarily accomplishes Changes heretofore deemed Astronomical Problems. The Links of the Sequences of Operation of this Natural Law are Successively Traced as Varied Phenomena noted by Science but referred to Hypothetic Causes; the Reasoning of Scientific Authorities having Heretofore Been, in effect, to Deny the Power of Terrestrial Gravitation to Overcome the Centrifugal Force Generated by Rotation. Hence the Axis was Deemed Unalterable, although the Oceanic Envelope was Assumed to Bulge Equatorially, so as Necessarily to Affect the Centre of Gravity, This was Unphilosophical.

E U R E K A,

AN ELUCIDATION OF MYSTERIES IN NATURE.



OOO. Spherical outline of the globe, in accordance with present geographical delineation, exclusive of equatorial expansion and polar depressions.

C. Assumed centre of gravity, intersected by the Polar axis, as now defined.

c. Varying centre of gravity of the earth's volume, resulting from continuous operation of natural laws.

A—B Orbicular rise of water level, on north-western Pacific coasts, from change of centre of gravity, tending thereto; such changes to the extent of but six miles, or one thirteen-hundredth part of the earth's diameter, coercing—by the law of terrestrial gravitation—the fluid envelope to reconfiguration of its volume, adequately to submerge beneath a deep sea the highest mountains on the globe, and continental areas, as in former epochs.

NCDE. Orbicular depression of water level on coasts of East Greenland, Northern Europe, Australasia, &c., as noted by Geology; the land apparently rising, the result of reconfiguration of oceanic volume, as above stated.

LL. Trend of varying axes, with their parallels the meridians of longitude, diverging westerly in the northern, and easterly in the southern hemispheres. Their perpendiculars—parallels of latitude similarly varying.

N.B.—The general proportions, angles of intersection, and inclinations in the sketch are unavoidably incorrect, but it may convey the ideas submitted.

CHAPTER I.

INTRODUCTORY.

THE author, believing that, in course of his researches into the phenomenal evidences of the operation of natural laws upon the earth's surface, and its oceanic envelope and surrounding atmosphere, he has traced the links of a discovery of vast importance, and disclosed the cause of successive alternations of position of oceans and continents, and glacial and torrid climates on the globe, revealed by Geology, now solicits consideration of his facts and arguments by men of scientific ability, untrammelled by a too rigid adherence to the early hypotheses which advanced science now calls in question.

The author has on several occasions, within the last fifteen years, endeavoured by contributions to various journals, and in his pamphlets, &c., to submit this discovery to the especial notice of those geologists and students of physics, who admit that the assumption that the earth's axis is capable of change affords the only feasible explanation of some of the most abstruse phenomena disclosed in natural science; and that evidence in demonstration of the fact of such a change, and its direction, and degrees of progression, is at the present day a scientific desideratum.* But that his past efforts on this behalf have failed in winning the attention so important a subject should attract, this renewed effort might perhaps have been unnecessary.

This essay is therefore printed solely for transmission, in a more readable form than manuscript, to scientific associations and intelligent reasoners, from whom the author claims kindly consideration for his want of good literary style, this essay having been written at casual intervals of leisure from business, often discomposing the mind from ready reversion to the several trains of thought, and perhaps inducing repetitions.

Theories of the changes of configuration of sections of the earth's crust, excavation of great valleys, and of the remarkable canyons of Western America, the Norwegian fiords, and similar crevasses of vast dimensions in volcanic formations all over the world, being products of the crumpling of a flexible outer crust, over a gradually cooling volume of internal liquid fire, are now very generally admitted to be untenable. Investigations as to proofs of an increasing heat, according to depth from the surface, are very contradictory of foregone conclusions. The deep sea temperature remains, even in the tropics, very low; and as mining operations to the depth of half-a-mile from the surface have never disclosed an inconveniently increasing temperature, there seems every probability that the friction arising from mining operations has but evoked a portion of the latent heat in all matter, and hence the slight advance in temperature, if any, in such mines does not point towards a core of extreme internal heat. In fact, there is more evidence in favour of a watery interior.

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* The French Admiralty is stated to be now specially engaged in investigating this question.

The agency of ice streams, implying local presence of a glacial climate, as also of oceanic outburst by a sudden convulsion, with its tumultuous surges overtopping lofty elevations and causing vast disrupting landslips, prior to submergence of continental areas—which Geology reveals as having been alternately at varied elevation above, or at varied depths beneath, sea level, through successive cycles of the antiquity of the earth—have probably been adequate to excavate these stated earth grooves. That the action of transition of position from lofty elevation to deep sea bottom, and *vice versâ*, has evidently been sometimes suddenly attained, and, at other times, so gradually, as that its stages present an almost unvarying placidity, is now very generally acknowledged by scientific reasoners on these data.

But the patient investigator has now not only these phenomena in view, but also the similarly varying alternations in zones of climate evidenced by Geology, as from glacial to torrid, and *vice versâ*, at periods in the antiquity of the earth, and apparently prevailing successively within each known part of it. He must trace out the exciting cause by noting the primary action of forces under natural law, and also their inevitable sequences. The degradations of the solid crust, by denudation, and overspreading of drift and diluvium—alternately excavating and depositing disintegrated materials—are revealed in such vast proportions to the limited areas occupied by primary formations, *in situ*, that former theories, based on assumptions of their result from igneous agencies, or exposure to weather influences and river action, of a similar climate to the present, do not now carry conviction of their abstract truth.

The origin of the cañons of the Sierra Nevada is thus described :—

" The indications of the existence, in former times, of glaciers extending over large surfaces in the Cascade Mountains, at least 2,500 feet below the present line of perpetual snow, is closely connected with the formation of the deep cañons through which the streams that drain these mountains, and the plateau of the 'Great Basin' beyond, uniformly flow. We have evidence in the magnitude of the excavation—often in the most resistant material—as compared with their present volume, that the amount of precipitation which formerly supplied them was much greater than now.

" The Golden Gate, the Straits of Carquines, the cañon of Pit River —which, following its tortuous course, is, for nearly a hundred miles, cut through a succession of walls of volcanic rock—the many cañons of Klamath River, those of the Des Chutes and its tributaries, and the gorge of the Columbia, cannot possibly be regarded as rifts formed by volcanic action in the barriers which they traverse. The conclusion seems irresistible that they have been formed principally, if not entirely, by currents of water, of which the present streams are representatives. . . .

" It is evident that glaciers could now be formed in the Cascade Mountains only by a great depression of temperature. This must have been dependent upon one of two causes : either a great and radical difference in the climate of the coast without a change of elevation, or the climate remaining the same, by the elevation of the coast to a general altitude several thousand feet higher than at present. . . .

[illegible]

[illegible]

[illegible]

Unfortunately, [illegible] of such observations. Here, at least, the author has [illegible] urged that tide gauges, fixed on rock [illegible], should be erected, and observations of tide or of the mean sea level of surface, between such gauges, be recorded at successive intervals, after ages of years, to test changes, as well of tabular level, as of depth, by finely adjusted instruments. Within the last thirty years of continuous opportunity for observation of the shores of Port Phillip, the author has noted a very marked depression of sea surface, that is, a recession and evident shallowing of the sea volume to the extent of about three feet in vertical height, whereby rocks formerly submerged, and their angular fractures protected by sand from the wearing action of storm waves, even at lowest tides, now show their bulk prominently above water at half tide.

The author has on several occasions submitted to scientific reasoners his matured conviction that the constructor's purpose for the mysterious stone coffer, within what is termed the King's Chamber of the Great Pyramid of Ghizeh, was to test the variation of the exact degree of parallelism between the surface level of water placed in the coffer, and the horizontal line of original surface level defined in the layers of massive stones built into the walls of the chamber, by successive observations, at prolonged intervals. Also, to note similarly the varying angle or degree of obliquity of the constructional perpendicular to the plane of the water level—*i.e.*, what is now termed the plumb line—with previously noted definitions of position of parallels or meridians of longitude, deduced from observations from the long passage through the Pyramid of the apparently varying longitude of northern constellations, as demonstrating whether such divergence, if any, is traceable to astronomical or terrestrial agencies. Whether such were, or were not, the objects sought by prehistoric science, the opportunities are open now for similar observations, possibly affording some clue to the period of continuance of existing cosmical placidity.

But changes in the centre of gravity of the earth's volume, though effecting change of position of oceans and continents on the earth's crust, of dire result to all kinds of organized life, and the works of man thereon, might, *per se*, be ineffectual in producing the violent catastrophic desolations revealed by Geology, which appear to require a sudden and complete overthrow of pre-existing equilibrium, which no placid re-adjustment of position and depth of the watery envelope of the globe, could, perhaps, primarily set in motion. The deposit and accumulation through centuries of ice or water upon one segment of the globe in disproportionate bulk to what, under same natural laws, but varying conditions, is amassed elsewhere, and the consequent flow to and deepening of the circumjacent oceans, must produce, in time, leverage adequate to increase the tilt, and ultimately endanger the equilibrium sustaining the globe in any given position upon the plane of her orbit. Hence there is probably a subversive force generating, tending to the accomplishment of a sudden catastrophe, whereby the position of the earth's poles, prolonged into space, might be completely changed as in a day, apart from the slowly progressive movement of the axis, and consequent gradual and almost imperceptible redistribution of the enveloping waters, in maintenance of sphericity of the earth's surface and its oceanic equilibrium. The alteration attained in the centre of gravity of the earth's volume in course of a geological cycle, if varying but within the space of five miles, or say but one sixteen-hundredth part of the earth's diameter, would, by obedience of the enveloping ocean to the law of gravitation, so alter the distribution of its waters, and their surface level, as that the highest of the Himalayahs might be submerged, while, in opposite sections of the earth's crust, the long-submerged continents of Atlantis or Polynesia might rise, until their mountain peaks attain the atmospheric limits of "eternal" snows. Mount Everist, the highest known mountain, being nearly 30,000 feet over present sea level, and the Peak of Teneriffe "fully two miles and a half high," a depression of ocean depth on the latter, and its transference to, and rise on the former to the amount of about 18,000 feet, would raise the Peak to the height of Mount Everist, and completely alter the present configuration of land and sea, though not affecting at all the sphericity of the earth's outline. Much smaller alterations of relative heights of land and depths of ocean, have sufficed to demonstrate evidences to us of almost incredible by-past changes in position of presently populated lands. "Shells, not now British, are found in many parts of Britain from 200 to 1,400 feet over sea level. The table lands were then submerged in a subarctic sea, and Great Britain existed as but a scattered archipelago of watery islands." * "Tertiary marine shells and sharks' teeth have been brought from the tops of hills at the base of the Sierra Nevada over 1,500 feet above the ocean." † Similar records of marine deposits at varying altitudes are the common facts of Geology.

The authenticity of the Book of Enoch, rescued from oblivion by Bruce, the Abyssinian traveller, has been doubted, because apparently composed by two writers, one of whom must have resided south-west of the Erythrean Sea, that is, of the Persian Gulf, Red Sea, and that part of the ocean which washes the shores of Arabia, therefore the place described by him must have been south of the Abyssinian Mountains and in or about our present definition of latitude 9° north and longitude 36° east. He, however, or his alleged co-author, describes the longest days as containing twelve parts out of eighteen, the whole number into which the day was then divided. Now twelve are to eighteen as sixteen to twenty-four hours in our mode of computation. Ergo, the theologian reviewers hold that this Book of Enoch could not have been written in latitude 9°, but that one of its authors must have resided in a latitude of not less than 36° further north, or within latitudes 45° to 49° north, where the longest days are from fifteen and quarter to sixteen hours.‡ But if a point south of the Pyramids, now in latitude 9° north, was—when this Book of Enoch was written, prior to the Flood of Noah (assuming its internal evidence of being the work of Enoch or even of any ancient scribe)—in north latitude 45°, the position in latitude of the Pyramids then must have been nearly that of Archangel now, one of astronomical importance for observation of northern constellations, as apparently increasing in longitude of stellar position. The climate also of 66° north would be one conducive to physical energy, requisite in the Pyramid builders, and far in excess of that developed in the present semi-tropical climate of Egypt. Geology discloses that prior to the last revolution, presumably that of the Deluge, Great Britain was in a glacial climate, while Australia was in one of semi-tropical characteristics, which are just the relative coincidences of the case presented.

The effect of gravitation of the fluid envelope of the sphere to the centre of gravity of the earth's volume, and the possibility of the action of natural law, evoked under the varying conditions of the expanses of land and water upon the earth's surface, accomplishing changes in such centre, have been hitherto overlooked by geologists. Hence varied natural phenomena have been ascribed to hypothetical causes, instead of being generally admitted as the inevitable sequences of effect to be anticipated from changes so accomplished. J. E. Tennison Woods, F.G.S., in a recent scientific paper, admits, as do many other geologists, that change of the earth's axis, *if possible*, would meet the difficulty of accounting for the successive transpositions of sea and land, and zones of climate, disclosed by Geology, as having many times occurred; but he remarks: "We can see marine fossils at lofty elevations—2,000 feet, in

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* *Testimony of the Rocks.* See diagram, p. 27. † *United States Survey*, Nov., 1875.

‡ *Enoch Restitutus.* By Rev. Edward Murray, London, 1836. See page 66 and ante, on the comparison of the chronology of Enoch with the Hebrew computations.

Queensland, over present sea level—but who can see the axis?" Another geologist and scientific reviewer ridicules the hypothesis of accumulation of snow or ice in polar regions, pronouncing, arbitrarily, that such an idea is "a craze." But these reasoners, though probably learned in geological science, may not have studied some other branches of natural science, and hence may not have thought of searching for and tracing, link by link, the action of natural law in developing motive force by the mechanical laws pertaining to all matter.

It is at all times difficult, and more especially for an obscure colonial writer, to obtain fairly reasonable consideration for new ideas, calling in question the accuracy of previously entertained theories, even when their bases are becoming matters of doubt among men of science. The author has long laboured in the field of physical research, and during some fifteen years past has endeavoured, by submission of his papers to scientific societies, to obtain investigation by the science of the day of the data submitted of the traceable action of natural law, the necessary sequences, and the inferences deducible; but his efforts have heretofore seemed abortive. He now, at mature age, while his mental faculties remain unimpaired, desires to place his discovery on record, as *his*, assured that it will bear examination, and at some period, near or remote, be universally admitted as the truthful elucidation of some of the most important and abstruse phenomena, the mysteries of nature, and problems of geology and astronomy. He endeavours to demonstrate the continuity of the causes of past geological revolutions, and hence, inferentially, the certainty of their recurrence under existing conditions of the sphere we inhabit; the time when, as of the hour of our death, being mercifully concealed, and probably only known by the prescience of THE INFINITE.

CHAPTER II.

THE MYSTERIES OF THE PACIFIC ISLANDS ELUCIDATED.

A VERY interesting paper, entitled "A Mystery of the Pacific," has been culled from a recent number of *Chambers's Journal*, and circulated widely by insertion in several Australasian, and other journals and magazines. It relates to the mysterious origin of the colossal erections and images observable in Easter Island, the pyramids of Tongataboo and Tahiti, and other wonderful structures and rock carvings found in the Society Islands and elsewhere. The article concludes by expressions of sentiments inducing one who has studied this interesting subject, and tried to investigate the physical antecedents or causes still traceable in their operation in nature, which are calculated to furnish an explanation of these marvels, to submit the light his researches cast upon them. The article in *Chambers's Journal* (No. 225, October, 1882) states that "no adequate explanation has yet been offered, but . . . we seem driven to the hypothesis of an ancient civilization, extending over some parts at least of the Pacific. . . . A

[illegible]

[illegible]

[illegible] similar causes may have [illegible] in past ages. [illegible] we may [illegible] ages ago from the last [illegible] separated families of man [illegible] which cut them off from [illegible] facilities for promptly re-developing the [illegible]. Hence, such saved groups became "cave men," [illegible] upon their sheltering walls the drawings [illegible] carving the relics, which being brought to [illegible], are still a problem to the geologist; the food [illegible] being probably the drifted carcases of animals [illegible] to other lands, stranded by the seething oceanic

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* *True Theory of the Earth, and Philosophy of the Predicted "End."* Published by [illegible], Edinburgh, 1868; and an enlarged edition by Hutchinson, [illegible]. Copies may be had gratuitously by any scientific society providing [illegible], by communicating direct with the author, Melbourne.

convulsion upon the former mountain tops, then temporarily become islands. If my contribution of reasons for my beliefs on this subject does but insert the thin end of the wedge of doubt as to accuracy of by-past theories on imperfect data, or mere geological speculations put forth too often as ascertained facts, reconsideration of the question under the light cast upon it by the accumulating testimony of recent discoveries, may lead geologists and physicists to seek for and accept sound bases for a truthful and permanent theory. The natural forces I demonstrate, as continuously in operation, must produce effects, apparent—at least to observations at prolonged periods—as consecutive thereto. To trace evidences of these in nature now, and proofs of their occurrence in long past periods, though previously assigned by science to other natural causes, hypothetically, has been the task of research I engaged in, and would now commend to all zealous and indefatigable investigators of the scope of action of physical laws, and their consequences to any sections of the human family, whether at near, or very remote future periods.

Scientific researches into the material history of our globe demonstrate that its external face or crust has "in the beginning"—a very remote primeval period—stood at a higher elevation, as regards altitude of its plateau-like elevations, now furrowed into mountains, above the present position. Facts, numerously certified to, demonstrate that land and sea have alternately changed positions; even the loftiest mountains yielding marine relics at points some thousand feet above the present sea level; and these are sometimes in such preservation, and of species still native to surrounding seas, as to foster belief that important alternations of position of the sea upon land have even occurred within comparatively recent periods, though there may now be hundreds of feet difference between former shore sea-levels and the present beaches. The belief is also induced that the mountains of to-day are probably but the indurated backbones of the skeletons of ancient plateaux, which, being subject to climatal precipitation (rainfall) and atmospheric denudation at one time, and to oceanic overflow at another, became torn into gorges and valleys successively, in which streams flowed towards the then existing ocean, bearing thereto the mechanically mingled and disintegrated earths of the various formations. The heavier portions of these, rounded more or less by long attrition in tumultuous torrents, have been deposited in the rocky grooves forming the river beds of each period, while the lighter part was borne away towards the sea. Thus, within each successive former surface, at various altitudes or depths, relatively to present sea level, there have been channels of watershed, containing waterworn mineral fragments, with particles of metal disintegrated from their matrices, or vein stones, just as we find demonstrated in our miners' successive shallow and deep leads, or those disclosed by adits in hillsides. But there are also other and alternating land surface evidences of oceanic overflow and recoil, when huge sections of mountains have been torn down, the previous river channels filled up, and new channel grooves—such as the wonderful cañons of the Sierra Nevada and Cascade Mountains—excavated, along the beds of which are deposited waterworn and rounded fragments of crystalline and metallic minerals, of naturally sharppointed cleavage, from the disrupted formations, as also a finer diluvium. In fact, the beds of the larger valleys have apparently grown up in altitude, while the mountain contour has become more and more furrowed into ravines, and their sides broken down. Vast plains have been formed by depositation of the denuded earths, intermingled with solid masses, forming a heavy sludge, densest at the bottom of the submerging waters. Such heavy deposits accumulate upon and around the bases of the harder rocky elevations, which, held together in substance by their indurated or crystalline formation, or intersecting bands, have not been completely broken down amidst the raging torrents. Again, the seething turmoil of the superincumbent water gradually abates. The water becomes clear. What change on the character of its first deposits has it made during this clearing process? The first is a spongy saturated mass, which becomes loose and porous when dry, more or less intermingled with solid particles of rocks, only partially disintegrated; while that more gradually precipitated from placid waters as they become clear, is of finely attenuated particles, closely compacted into a binding surface-covering to the successive deposits beneath, and of a nature much more impervious to water or atmospheric denudation.

Another cycle of Time's progress passes on, and again these sea-bottom surfaces become dry and elevated lands, within which these several operations of Nature are available for disclosure to view of intelligent observers, and the last alluded to are observable at the edges of every railway or road cutting, deep quarry, or mining shaft. The surface-binding deposit is evidently separate in character, and hence formation, as a deposit of finely pulverized earths, from the coarse, sludgy, and porous deposit beneath, much more easily affected by atmospheric agencies, and having intermingled masses of the softer rock formations, so disrupted by aqueous action, and thrown into confusion of the strike or inclination of their stratification, as to often present dissimilar aspects on the adjoining sides of a cutting, and thus disprove assumptions of their volcanic upheaval. Disruption by water in violent commotion cannot be a similar action to upheaval or eruption from the operation of distant volcanic outbursts, which would probably produce only a slightly waving parallelism of the strata affected, totally different in aspect from the disruption, slide out, or overturn of strata, undermined by water in motion.

The great valleys and mountain sides are profusely marked with parallel striæ, or terrace grooves, defining the relative heights to which either ice streams, the tumultuous torrents of an aqueous convulsion, or the tide action of a vast sea margin has attained. In many of the great valleys, and in mountain gorges, in Victoria, as also in many other parts of the world, vast masses of waterworn rock, termed boulders, have been hurled along, and stand piled on each other, loose from the rocky base. Geologists have traced evidences in Nature of some twenty-nine or more overwhelming submergences and preliminary deluges of invading ocean torrents, which have successively devastated, and again transformed, sections or faces of the earth's surface, as alternately submerged beneath a deep ocean for a cycle, and again and again raised far above previous sea level, and re-clothed with vegetation, inducing watershed by rainfall, and formation, on each successive surface, of channels for rivers flowing towards the sea. The practical miner of the Pacific Slope turns to profitable account this discovery of a series of successive surfaces, and attains, by boring or otherwise, information of the precise position of ancient channel grooves, often of vast dimensions and rich auriferous product. The miner of Australasia has only recently begun to realize the occurrence of ancient channel drifts beneath the high table lands of the mountains, or the beds of the great valleys or plains, extending north and south from the dividing mountain chains to the sea coasts, as at *several successive depths* from the present surfaces. He not infrequently expends large sums in boring or sinking *past* evidences of former surfaces, beneath strata he recognizes as precisely similar to successive surface deposits, until he pierces the third or fourth layer of basalt, each marking an alternate cycle of changes, when alone he (erroneously) thinks he has gone deep enough to strike a channel with deposit of auriferous drift. Each successive surface, however, had its easily traceable layer of former surface mould, affording sustenance to vegetation; and seeds and kernels of stone fruits and tree stems are very often found at varied depths, in a wonderful state of preservation, though alternating with fossilized beds of marine organisms, and beautifully perfect and delicate shells, heaped together *en masse.* Each former surface had also necessarily its channels of riverflow, varied by landslips, thus depositing ruptured rock, too often assumed by our miners as bed rocks, over former auriferous drifts. Recent discoveries of alluvial gold in the shattered slate rubble beneath Melbourne streets were suggested as probable by the author many years ago, when advocating, in the daily press, search by boring for ancient beds of the Yarra between the down-slidden slates of Collins-street and those of the Government Domain. The whole valley is a promising goldfield. *Vide* "Reasons Suggestive of Mining on Physical Principles for Gold and Coal," pages 48-9.

CHAPTER III.

THE CAUSE.

Now, what CAUSE in Nature's disclosures of the mode of operation of the laws of matter can be rationally assigned as capable of effecting these alternations of position of sea and land, with their concomitant results upon the composing matter of the earth's crust, and the living organisms upon it? Whence came the operating force? Has it present and continuous action, culminating in intensity to the occurrence of a devastating catastrophe, such as geological records disclose as having consecutively ravaged sections of the earth in bygone periods? Or is such force the result of agencies long slumbering, and rarely roused into fitful opportunities of development and catastrophic action? Again, have such catastrophes—which must have destroyed all animal life during their occurrence upon one section of the earth's crust—necessarily extended over the whole periphery of the globe? Or have some portions evidently emerged, and served to repopulate the globe and its enveloping oceans, with organic life? These are the subjects of my research and investigation, and the discovery I claim to have made does solve these questions, and yields explanation of many of the problems of science, as well astronomical, as within the realms of Geology and Natural Philosophy.

Meteorologists have submitted hypotheses, deduced from extended observations, and generally accepted by acknowledged scientific authorities, to the effect that there are atmospheric currents at high altitudes, constantly proceeding north and south from the earth's equatorial regions, to their relative nearest pole; while lower currents of air, and the upper stratum of ocean surface, tend in a contrary progression, each seeking to fill the partial vacuum caused by rarefaction of their mass density, by tropical heat causing great evaporation from the sea surface, and elevation into the upper regions of the atmosphere of the attenuated air, loaded with finely comminuted particles of vapour. The air currents, progressing polarly, convey this vapour at high altitudes, its volume being continuously increased, as well by evaporation from the calm sea surface of the tropics, as from the areas of dense evergreen vegetation peculiar to the warmer latitudes, where lands are not glacial from altitude. Of this tropical vapour, a considerable proportion is precipitated as rain in and near the tropics, but the excess conveyed towards the poles, and receiving accessions from every evaporating surface *en route*, such as the large oceanic areas, is ascertained to be very great. Its amount yields the precipitation (rainfall), which, as registered, is found to increase in quantity in the ratio of distance from the tropics towards polar regions. And it is also noted by scientific observations, that precipitation from vapour at high altitudes is only induced by contact with, or contiguity to, refrigerating, and thus condensing agencies, such as the cooled atmosphere surrounding glacier-topped mountain peaks; and that the majority of land surfaces, not densely clothed with umbrageous vegetation, radiate heat, producing ascending air currents to high altitudes, and neither yield vapour largely, nor induce much precipitation locally.

Now there are extensive areas within polar regions where ice forms and accumulates; its bulk of mass ever recruiting by precipitation there, chiefly as snow, and but slightly wasted by thaws in summer, or the breakage and removal of fragments of the ice-bound land margins, which, as icebergs, fall into the environing seas, and are carried by the surface ocean currents towards warmer regions. In some sections of arctic and antarctic regions this diminution of the accumulations of ice thereat goes on continuously on a very large scale, and mariners traversing the route of these bergs towards the equator, in both hemispheres, have described the vast dimensions of bergs met with at sea. Those seen by the Australian clippers taking the "great circle" route to save distance by descending to cold latitudes, as also those so thickly studding the North Atlantic every season, until stranded or dissolved in warm latitudes, are often described as of vast bulk. What the weight of bergs so broken off the ever-accumulating masses within polar regions, may relatively be to the annual increase by precipitation, science cannot discover; but Lieutenant Parry estimated the weight of one aground in Baffin's Bay at 1,292,397,673 tons, being 4,169 yards long by 3,689 yards broad, and 57 feet over sea level. Another was computed to contain 900,000,000 cubic feet; and others have been noted as of even vaster dimensions, and these are but the fragments broken off the vast congealed volume. As regards the weight of precipitation in aid of ice accumulation upon such land surfaces as Greenland, and the north-western arctic shores of America, only a small portion of the area of which abuts upon an uncongealed sea, where it may lose fragments by eroding action of sea waves, there were statistics collected in 1867 of one snowstorm in the United States, which show an enormous weight of snow deposit. "The cloud covered an area of 1,500 miles by 300. The snow averaged one foot deep, and was estimated to weigh about five tons to the acre, or 3,200 tons to the square mile, or a grand total of 1,410,000,000 tons of snow!" Note, all this from one storm!

The continuous congelation, and hence accumulation of the rainfall (*i.e.*, also hail and snow) in arctic regions is only reduced by the brief summer thaws, and it has been noted that such thaws do little more in the *mer de glace* in the interior of Greenland than give a glassiness of surface to masses of ice, often there of mountain dimensions, which is reflective of solar rays, and thus renders the ice more impervious to wasting influences. Precipitation (or rain or snow fall) in arctic regions is manifestly greatest just at the edge of the polar circle, for it must be conceded that the continuance of vapour in the atmosphere within a frigid climate is practically impossible. It must be condensed, and fall as rain, snow, or hail.

In the natural configuration of the contour of either half of the earth's northern hemisphere, striking contrasts are observable as to prevalence of vapour-yielding areas, or their reverse, those radiating a dry heat, tending to currents of heated air ascending to the upper regions of the atmosphere. There are also notable contrasts as to an abundance or deficiency of lofty mountain summits, or densely timbered hills, which are observed to produce relative and very marked effects upon the amount of vapour raised, or being transmitted in the upper atmosphere by the polar currents. The tendency of these is to attract superincumbent vapour, and accumulate same into dense cloud masses, which at length are condensed by their cooling influence upon the adjacent atmospheric currents, or placid strata, and precipitate their contents locally. Let us observe such contrasting areas.

Delineating the northern hemisphere as upon two flat maps on Mercator's projection, having their respective circumferences between longitudes 110° west of Greenwich, and extending relatively east and west to 70° east longitude; observe now that on the western map, or that segment of it especially between longitudes 120° west and east respectively, there is the vast evaporating area of the Pacific Ocean, with very few peak points of local attraction to passing vapour, to induce a large rainfall between the tropics and Behring's Straits. On the eastern map, however, we observe the heat-radiating and comparatively vapourless area of the continents of Europe, Asia, and the northern part of Africa, upon which there are numerous mountain summits inducive to precipitation from vapour, even in its loftiest height in the atmosphere, whether by the contiguity of their glacial summits to impinging clouds, or by these imparting a condensing temperature to the surrounding atmosphere. The immediate and continuous sequence of this contrast of physical conditions affecting evaporation, rise of the vapour to join the volumes acted on by polar currents, or its liability to be arrested in mid-air by condensing agencies, and precipitated, is the transmission of vast volumes of vapour—chiefly drawn from the placid surface of the inter-tropical Pacific—to, and its condensation and precipitation in, that segment of the Arctic Circle immediately in the line of the north polar air currents, radiating polarly from the equator, which here, in the segment specially under consideration, intersects the Pacific Ocean. But such exceptional precipitation, and the subsequent congelation of the rain or snow into dense masses of ice in this western portion of the polar regions, necessarily implies a largely disproportionate accumulation over that induced by similar causes in the opposite, or eastern segment, of arctic polar regions. Here, the land barriers have no outlet to the sea, save at the mouth of Behring's Straits, which only open during the brief summer of that icy climate; while the lesser evaporation and precipitation in the eastern segment of the other half-hemisphere, or either of the two remaining segments of the whole northern hemisphere, each 120 degrees in width, is greatly diminished in volume, viewed as a congealed mass of dense material, by the continual offshoot of bergs, either of river-borne glacier formation, or as masses of the ice-bound shores, undermined by wave action. These bulky icebergs thence float off to the southward, impelled by the southerly currents of ocean surface, towards the warmer latitudes, so that there is manifestly a disproportion accruing between the gravity of accumulated ponderous material in the quarter north of the Pacific, and that amassing north of Europe and north-western Asia. The investigation of explorers of these bleak inhospitable shores fully demonstrates that accumulation of ice, even to the elevation of vast mountains, progresses during centuries, under no natural condition of diminution, but by river-borne glaciers, and the offshoot of bergs.

But a disproportionate accumulation of deposited matter, of great weight in proportion to its bulk, upon one segment of an equipoised sphere, resting in any given position upon the plane of her orbit, must affect the equilibrium of the sphere as regards the permanence of its centre of gravity; and hence, by mechanical law, its axis of rotation, as also of the angle of intersection of the plane of its equator—as perpendicular to the axis—with that of its orbit—the path of the sun, termed the ecliptic.

If the centre of gravity of the whole volume of the sphere be really affected, and demonstrable to be liable to a continuous change, in even the most minute degree, a chain of links of natural phenomena will be evoked, testifying to its occurrence, though only traceable in effect by observations at successively prolonged intervals of time. The water level at every point of the sphere's contour, must, to maintain its sphericity, be absolutely horizontal to a radius thence to the centre of gravity, and *vice versâ*—hence permitting no change in elevation of any section of that contour, *if* it be impossible to disturb the sphere's centre of gravity. Do researches in nature prove this to be now—and to have been in past ages—an unchangeable outline? Assuming that the sphericity of the earth's contour demands continuance of water level just as we find it at any given date, when calmly quiescent upon our shores, whence has arisen the noted changes of rise or depression of that water level available to demonstration in ancient beach margins, and on existing coast lines in every part of the globe? Either the land surfaces must rise or be depressed, relatively to the sea level, by some hitherto unexplained phenomenal force, which surely cannot act, and periodically *re-act*, in subversion of former action, by any natural law; or the oceanic envelope of the globe must be subject to redistribution of volume by the operation of natural law. But even if abstract facts denoted a sub-terrestrial action and re-action, in the alternate rise and sinking of land surfaces, there must necessarily be a re-arrangement of the volume of oceanic waters, consequent upon the displacement occurring by the rise of extended areas of land over sea level in one segment of the earth's contour, or their depression below sea level in another. The hypothesis of the simple obedience of the fluid envelope of the globe to the all-powerful law of terrestrial gravitation, when called into action by an evidently natural cause affecting the centre of gravity of the whole volume of the sphere, affords an intelligent solution of this problem presented to science. Accumulation—by operation of natural law—of ponderous matter upon one segment of the earth's arctic polar circle, in ascertainable excess of the quantity accumulated around the pole itself, or in any opposite arctic segment, *must*, in accordance with the law of gravitation, cause change in the centre of gravity of the sphere. Looking into the operation of natural laws, and tracing successively the links of observed results thereof, there can be no intelligent doubt of such accumulation, but certainly not at the pole, or centre of the arctic circle—for earth's vapours must condense and fall, before passing far within the outer edge of the climate producing condensation of air-borne vapour. The dense gravity of this deposit, as also of the simultaneous rise of level—that is increase of volume—of ocean waters in the direction indicated by the change of centre, or towards the north-western segment of the northern hemisphere, naturally causes the globe to tilt slightly on the plane of her orbit. This accomplishes an inevitable change of position of the earth's equator, relatively, to the ecliptic; and hence, as well as by the necessity, under natural law, that her axis shall intersect her centre of gravity, change ensues in the position, defined by stellar observations, of the parallels of the axis—the longitudes, as also of the parallels of latitude, with zones of climate. While the initial point, such as Greenwich Observatory, is deemed unalterable in longitude, all others deduced from it by computation of chronometer time, must remain in same relative position thereto, but stellar observations will denote discrepancies of position of their extensions into space at each successive definition, and assumed fixed zones of climate demonstrate a continuous rise or fall of temperatures respectively.

If such changes of stellar position are now or have ever been in progress, are they admittedly demonstrated? The science of astronomy denotes a recurring series of changes of an important character, which, though apparently recognized and understood by ancient philosophers, have, in this age, long been the subject of study and conjecture, and are still deemed mysterious problems of the science.

It has been noted that the opposite points at which the earth's equinoctial, and the ecliptic or plane of her orbit, intersect each other, which are called the equinoctial points, as at opposite extremities of the line of the equinoxes, are not stationary in position in the firmament, but recede along the ecliptic, contrary to the order of the signs of the zodiac, at the rate of a fraction over 50″ yearly, so that all northern constellations appear to pass to eastward of the extension of the earth's pole in the firmament, and are thus said to attain an increasing longitude. This, together with the diurnal tidal wave phenomena, has been currently ascribed to the action of solar or planetary attraction of an assumed equatorial bulge of the earth's volume—a theory based on wholly unproved and merely conjectural hypotheses. The continuing variance from period to period of observations of each definition of approximate parallelism of the equinoctial and ecliptic, may now be intelligently referred to the tilt given to the globe as she rests on the plane of her orbit, by the leverage of an ever-increasing and disproportionate weight of ponderous matter upon a segment of her northern hemisphere, and its aggregation, not at the polar apex, but chiefly upon what, by our maps, we term the south-western margin of the arctic circle. Not only is the effect produced by a direct leverage, but by change necessarily of the centre of gravity of the earth's volume, implying alteration of the line of her axis, which must intersect that centre. Hence, however imperceptibly to ordinary local observations, and only traceable by stellar observations at prolonged periods, the parallels of latitude, including the equator, with their perpendiculars the longitudes, must be deflecting from their former definitions of charted position over the earth's surface.

Hence we believe that we have a solution of the problems of the Precession of the Equinoxes, and of the Oceanic Tides, both previously referred to an assumed and apparently unphilosophical theory of a solar or planetary attraction of a supposed equatorial bulge on the earth's contour, such bulge being wholly irreconcilable with the action of terrestrial gravitation demanding sphericity of sea surface. Tidal phenomena appear to carry out by a gentle pulse-like vibration, or mild earthquake shock, the transmission of films of ocean surface in redistribution of volume, necessary by recurring or continuously progressive changes of the centre of gravity, the outflow being towards the direction of the change of centre, thus requiring re-adjustment of superficial equilibrium. And these waves gather in volume as they roll, and their undulations evoke into action a succession upon their course, until checked or recoiled by land margins, or opposing surface currents from the equator; the diurnal outflow and recoil, causing high and ebb tides, being probably controlled in their synchronism, though not primarily induced, by lunar attraction.

CHAPTER IV.

THE RESULTS.

This solution casts light upon those problems of current geological science, which have disclosed abundant evidences that most known countries have alternately occupied varied positions of elevation above, or depression beneath deep oceans; and during elevations, alternated in climate from tropical to glacial, through every intermediate temperature, inducing development of organisms peculiar to each as brought to light in these last days by geological researches. The ancients, probably, had not such evidences of the recurrence of convulsions during the antiquity of the earth; but that some races of man did apprehend desolating, if not ocean-submerging catastrophes, destructive to a section of their race and their records, is evident from the massive character of their public edifices, and their positions, as placed chiefly upon the highest points of their lands. Of this kind are those wonderful edifices in Easter Island, in the South Pacific, where Miss C. F. Gordon Cumming, an eye-witness, testifies to observance of "cyclopean platforms at intervals all round the coast, from two hundred to three hundred feet in length, and about thirty feet high, all built of hewn stones five or six feet long, and accurately fitted, without cement. Above these, on the headlands, are artificially levelled platforms, paved with square blocks of black lava. On all these, stone pedestals remain, whereon were placed the great images, which, by some powerful force"—probably overflowing ocean currents—"have mostly been thrown to the ground and broken. The average height of the figures is about eighteen feet; some of those lying prostrate are twenty-seven feet long, and measure eight feet across the breast. Ponderous crowns of red lava, hewn perfectly round, some of which are thirty feet in circumference, still lie in the quarry whence they were hewn, fully eight miles distant." "Others have been placed in position," on the heads of the images. "Well may we marvel by what means those unknown sculptors transported their ponderous works of art from one distant point to another on this lonely volcanic isle. The statues are literally lying about in hundreds, and the very rocks on the sea beach are carved into strange forms—tortoises or human faces. There are, besides wooden tablets covered with hieroglyphics, also stone slabs covered with geometric figures, curious birds, animals, and faces, painted in black, white, and red. Doubtless these also are hieroglyphs. They are ranged inside the quaint stone houses, of which about a hundred remain at one end of the isle—Easter Island. These are built in lines, with their doors towards the sea; the walls are about five feet thick, built of flat stones, laid in layers. Unless the face of the island has undergone some wondrous change, these mysterious workmen could not even have possessed wooden rollers to aid them in the toil of transport, for there are literally no trees on the island."

"At Paparra, in Tahiti, there is a stone pyramid 267 feet long, by 87 feet wide, standing on a pavement measuring 360 feet by 354 feet; the height of the pile, 44 feet." Who can now doubt that such remains, in similar isolated spots, evidence that these are but relics of early races of civilized man placed upon the highest portions of formerly existent large areas of inhabited lands now submerged. Speculations as to the workmen having only flint tools are far-fetched and absurd. Influences of weather corrode and gradually decompose all iron articles, so how can we so positively affirm that prehistoric man did not use iron tools? The percolation through submerged earthy formations of the concentrated saline waters from a sea confined amid a glacial climate, where its lighter and less saline particles rising to the surface are successively congealed appears, from noted experimental results, to effect a solution of both silicious and metallic atoms therein contained. Such solution, or the pasty mass so percolated, exposed thereafter to magnetic currents, or crystallizing, or concreting agencies, appears to have evolved the fluid basis, as well a solution of metals as silica—of the silicious veins, forming the matrices of the metals in rock formations. The author has recently urged upon the Victorian Mining Department the expediency of obtaining analyses of the mineralized waters in which quartz lodes—more or less honeycombed with empty cells, and denuded of gold near the surface—appear, when immersed below water-mark, of compact structure, and abundantly permeated with gold and pyrites. Chlorine is now used as a solvent of finely comminuted particles of gold at our pyrites works. In the natural crystallization of rock salt (which the author has submitted to science as the submarine product of a glacial sea, and hence, *in situ*, a proof of such climate having prevailed locally) an excess of chlorine may have been liberated, adequate to dissolve all metallic substances exposed thereto, which again may have been, by electric action, concentrated in deposits in the matrix veins, or in aggregated masses within drifts. Hence it is vain to look for discovery of metallic heads of tools in use in prehistoric eras, but their non-discovery is, *per se*, no proof that such were not in use. The magnitude of the cut stones hewn out of the rocks, transported and elevated to their place in the edifices discovered, preclude the idea of either inferior ability or mechanism being alone within the ancient workmen's resources.

The late Sir Roderick Murchison remarked that "the commencement of the first glacial period in the history of the Alps was coincident with a vast change in the level of materials constituting the then existing lands and their *débris*, which had previously lain beneath the waters; and of same date as that which submerged a pre-existing northern continent, and brought it under the influence of a glacial sea." Cuvier observed that "if there be anything settled in Geology it is this, that the surface of our globe has been subjected to a *great* and sudden revolution; that that revolution broke down, and made to disappear the countries which had been before inhabited by men and animals; that, on the other hand, it laid dry the bottom of the immediately preceding sea, and formed the countries which are now inhabited. But the countries now inhabited, which had been laid dry by that last revolution, had been inhabited *before*, if not by man, yet at least by land animals. It follows that preceding revolutions one, at least had buried those regions beneath the water." Cretaceous containing sea shells, sedimentary, and drift formations have been found in lofty elevations in nearly every part of the known world geologically examined: coal of good quality has been found 4,500 feet above sea level in the western range of the Sierra Nevada. The author has submitted the hypothesis that coal, viewed as silicified masses of vegetable origin, has been deposited chiefly in estuaries, or amphitheatre-like basins of former sea bottoms, from submerging ocean waters, subsequently covered by earthy depositions, and the whole, under enormous pressure, permeated by intensely saline diluents containing silica or lime in solution, which ultimately cemented the several layers of deposits, with their enclosed veins. Wood in unchanged appearance has been found mineralized by soakage in silicious water. The vegetation consolidated in the coal measures much more resembles the stems and fronds of marine plants, and probably only such could be compressed into masses forming layers, sometimes many feet in thickness. Had land vegetation and tree trunks and branches been compressed together, the mass would have presented a marbled appearance, from its intersection by streaks of earthy incombustible matter, and be quite different in aspect from the homogeneous character of coal veins. The coasts of Tierra del Fuego, and certain areas in the Indian and Pacific Oceans, produce extraordinary rank growths of submarine vegetation, in the floating tangle of which ships have been becalmed. The strange types of reptile-like animals, or forms, half-seal in body, though quadrupedal, or as anomalous in structure as if half-bird and bat, may be still extant in nature, and feeding in these sea-bottom meadows, or flitting amidst the branches of the gigantic palm-like foliaged submarine trees, ascertained to reach a length of 1,500 feet or more, from root to extremities on sea surface. Who of our modern geologists can divine, from fragmentary petrifactions, or fossil skeletons of these forms of animal life, whether their organs of respiration differed from those of the seal or the platypus, or cetaceous animals, as able to support life below water as above it! The author has elsewhere suggested boring for coal in depressed basins or swamps, which may owe their depression of surface to subsidence of compressable layers of material.*

The continuous action of the agency in nature herein traced from its initial point, in development of a *force* or motive power of vast consummating results, points to the absolutely necessary sequence of just such alternations in aspect of the earth's crust as Geology has disclosed. Again and again culminating catastrophes have opened up or depressed ocean barriers, and poured their torrents of desolating waves to submerge continents. Yet throughout all such convulsions as yet traced by science, sections of the globe have been the abode of many varied forms of organized life, apparently exempt at that era from visitation of an inroading sea, which must have destroyed as well fresh-water life, as all formerly indigenous to the submerged areas of land. Again and again, many times in the vast antiquity of the globe, however, each known surface of the earth has been subjected to oceanic submergence, at one time tumultuously

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* *Reasons Suggestive of Mining on Physical Principles for Gold and Coal* (Melbourne, 1875), page 46.

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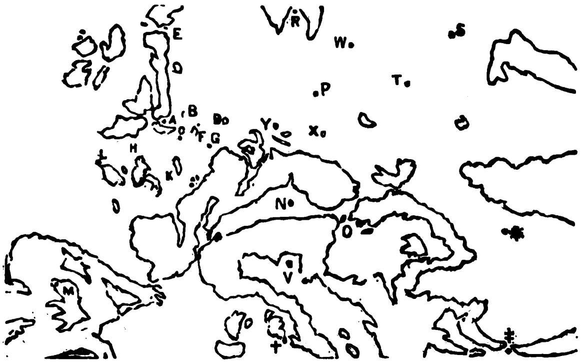
tides, in transmitting undulations of sea surface from sections of the earth's contour, where the altering centre of gravity renders its volume redundant, towards other sections, requiring increase, in adjustment of the slightest alteration of equilibrium, appears to be regulated by Him figuratively declared to "weigh the mountains in scales, and the hills in a balance." The tides apparently act by their regularly recurring flex and reflex, as Nature's safety-valve governor, in restraint of all minor causes of convulsive action. But as sea levels rise upon some shore lines, their ocean barriers seem relatively depressed, until at length entry of oceanic waters is obtained to inland depressions of surface, such as the supposed ancient sea beds of the African Sahara, the salt deserts of Arabia, or the Great Basin of Central Asia. The result of such accumulation of water in abnormal positions, might react in confirming or reversing the progress of existing changes; a desolating catastrophe might ensue, accomplishing the re-configuration of the areas of land and sea, ushered in with appalling calamity to the races of man, or animals, exposed to the inroad of the raging waters, or the ensuing submergence thereby. Families of mankind, saved amid such horrors of overwhelming deluge, would thenceforth date their history, when struggling, in lonely isolation from the rest of the human race, as in Easter Island, to regain their lost comforts, and arts of civilization, from the period of their succour upon a mountain top. That, as a lone sea-girt isle, might be thereafter, for a cycle, the only remnant of a former continental area, more or less populated. The climate, local productions available, varieties of food, materials for tools, and other conditions of deprivation, might be adverse to a return to that family's former course of life, as in an advanced state of intellectual culture. Their first abode might very probably be in caves, on the walls of which they might have skill to depicture common objects of memory of their former life, some discovered seeming as childish as any schoolboy's work on his slate. Their food might be stranded carcases of animals swept from the submerged lands—no proof that subsequently found fossil specimens of these were there indigenous. The position of such unfortunate human beings would speedily become as abject as their locality was isolated. Like shipwrecked passengers on inhospitable rocks, such as the Auckland Islands, their tools and implements would be fashioned out of stones, bones, wood, or coral; and eventually, as cut off from all succour by their former nationalities, they might adopt all the rude characteristics of the lowest type of the Polynesian savage.

Researches in Geology disclose that the shores of West Greenland, Kamtchatka, Eastern Siberia, besides others, are "sinking," that is, the water level is rising on them; while those of Northern Europe, the Baltic, and Australasia, are evidently rising—the sea volume there shallowing. Hitherto, deductions from local observations of such changes of sea level have been tempered with impressions as to their result from volcanic upheaval, or some other improvised tendency to alternately rise, and be depressed, by intermittent motions. Hence, variations of ancient beach levels, of successive eras, may have been confounded with more recent evidences of a present continuous progress in one course of action. There has been no real interest taken in tracing the continuity of these apparent movements in one direction.

The fragmentary masses of floating ice mentioned at pages 16-17, with their estimated weight, may appear too insignificant to yield an impulse towards a change of the centre of gravity of so vast a body as our planet. But a preponderance of weight on one arc of surface, and its withdrawal from another, must affect the centre of gravity. The water level follows the direction of change, and by its shifting volume, not only marks, but maintains the change, or rather helps to increase it. As regards the masses of ice displaced from northern regions, and which have at times actually reached the Azores, Scoresby "counted over 500 bergs, of altitudes of several hundred feet, drifting along in latitudes 69° and 70° north, some of them a mile in circumference." Masses of concreted bergs have been met with by vessels sailing between Canada and Europe of such vast dimensions as to seem a perfect ice barrier. The *Home News* of 26th April, 1867, stated that "one vessel had to sail nearly 200 miles southerly alongside a perfect continent of ice, while others passed icebergs of enormous bulk." The submerged portions of these bergs being six to eight times larger than the part visible, their corresponding weight must be enormous, hinting as to the fact of a change of centre of gravity, which the redistribution of the oceanic volume confirms, with sequences of other natural phenomena. There are doubtless similar movements progressing in the Antarctic ocean, but, so far as science has ascertained, there is no impediment presented by a similar want of outlet for bergs to the open sea, as is presented within the north-western segment of the Arctic circle. It is to be lamented that so little is known of Antarctic shores, upon which might possibly be found a race of man once removed from a more temperate clime by the forces denoted, and also relics of their former civilization, and remains of an older world, drifted thither as the mammoths to Siberia, and similarly preserved. The North-west passage is now threadbare of interest, while the Antarctic is quite unexplored and unknown. Surely, its shores could be reached at some point with safety.

The links of this discovery of a cause of production of a natural force, and its operation in nature, can be traced readily enough now, though the effects, where previously noted, have been heretofore currently ascribed to other causes, or are still held by some savans as problematical, and open for scientific elucidation. The oft-noted inconsistencies between the early and more recent definitions of positions at sea, as to latitude and longitude, are probably only the inevitable result of the now altered axis, and tilt of the sphere on the plane of the ecliptic, consequent on the continuous exertion of the force disclosed, and its necessary effects. The noted overlapping to an ever-increasing degree, of each periodical definition of the 141st degree of east longitude upon the territory of Victoria, and the consequently renewed claims for re-adjustment of boundary eastwards by South Australia, were several years ago anticipated by the author, and the attention of the respective governments directed to the actuating cause. The events have proved his prognostications correct; but new definitions on this point, as well as recent observations as to the incorrect position of coast lines, or reefs, as charted by early navigators, are still usually set down to the score of former inaccuracies of observation, or assumed inferiority of instruments. The noted changes of surface sea level on the coasts of Australasia, very evidently increasing as they are, coupled with the disclosure of numerous belts of ancient shell beaches at very varying altitudes, call for greater attention than the subject as yet obtains, and the introduction and periodical inspection of rock-based tide gauges.



SKETCH OF EXTENT OF SUBMERGENCE OF WESTERN AND CENTRAL EUROPE, DURING GLACIAL EPOCH.

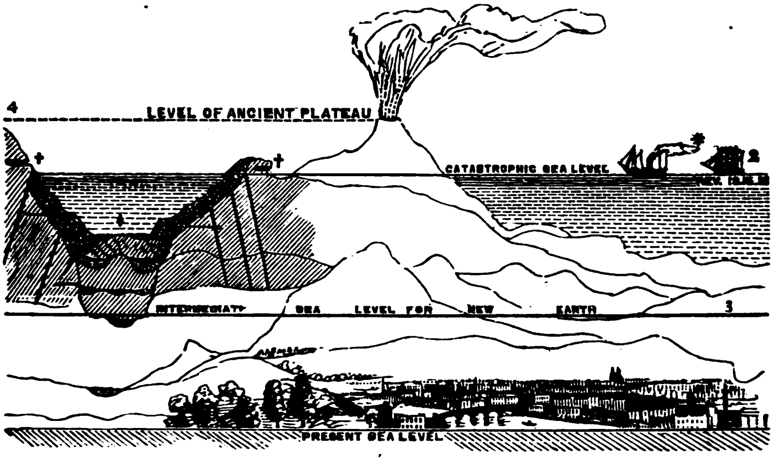
Reference to position of sites of existing European cities, then submerged by ocean, or inland seas :—

A	London.	G	Brussels.	O	Vienna.	W	Stockholm.
B	Yarmouth.	H	Cherbourg.	P	Copenhagen.	X	Berlin.
C	Margate.	K	Paris.	R	Christiana.	Y	Hanover.
D	Amsterdam.	L	Brest.	S	St. Petersburg.	‡	Constantinople.
E	Edinburgh.	M	Madrid.	T	Riga.	†	Rome.
F	Calais.	N	Munich.	V	Venice.	*	Odessa.

CHAPTER V.—IN CONCLUSION.

THE SUBJECT VIEWED AS ELUCIDATORY OF OBSCURITIES IN SACRED PROPHECY.

"All are but parts of one stupendous whole,
Whose body Nature is, and God the soul."—POPE.



AN ASSUMED DIAGONAL SECTION OF PEOPLED LANDS.

1.—In the foreground is the site of a populous city, on sea level, submerged by gradual reconfiguration of ocean volume, converging to a varying centre of gravity, or by sudden catastrophe, during a secular geological convulsion.

2.—The ocean overtops all but the highest mountain peaks.

4.—Contemporaneously, as Geology discloses, some mountains then revive long slumbering volcanic energies.

*—Mariners arriving, as in vision to the prophet Ezekiel and St. John in Patmos, over site of submerged city, obliterated from view for ever, "to be found no more at all."

‡—Ancient water courses of each successive surface, during geological epochs, alternately depositing water-worn *débris* of formations, with their metalliferous veins, on bed rocks, and again covering these by land slips, diluvium, or sedimentary deposits, forming new surfaces, each having its channels of watershed.

†—Sites of refuge caves for men and animals in the tops of the then mountains, whence human survivors have emerged to re-occupy their country, either changed in configuration as a New Earth,

3.—Or become one, or an archipelago of islands, with every trace of former civilization, save massive edifices, swept away, or covered with sedimentary deposits. Hence, survivors, "cave men" in small groups, degenerated to the debased position of the Polynesian islanders, not even retaining traditions of early history, or, as other peoples, mentioned by Humboldt, do, of their succour during a devastating deluge, on tops of mountains.

THE late Rev. Dr. Chalmers, in his Astronomical Sermons, forcibly pictures the dire catastrophe to sections of the earth's crust, the family of man, and all species of organized life, if by some sudden and wholly unexpected cause, the polar axis of the earth was violently changed. A convulsive loss of equilibrium of a globe surrounded with an ocean, only restrained within limits by low elevations of land barriers, would eventuate in a complete change in the relative positions of its oceans and continents, with also changes of climates, glacial, temperate, and equatorial, thenceforth for a cycle. The first effect would be probably that forcibly depicted in the visions of sacred prophets, such as that the stars of the firmament would appear to fall from heaven, the atmosphere be darkened, the sun appear as obscured by sackcloth of hair, and the moon as blood. Then rivers and streams of water would rise upon at least the shoulders of high mountains and hills* from oceanic outburst, inducing ruptures of formations, landslips, vast denudations, with disintegration of mineral veins and rocky hill structures. The *dêbris*, disseminated through the surging waters, carving out new valleys beneath disrupted mountain gorges, and devastating and overwhelming all previous evidences of man's industry, would gradually deposit its constituent matter as sedimentary strata, to the complete obliteration of the previous features of land surfaces. In the forcible words of the sacred Scriptures, pourtraying a vivid vision of the calamitous events of the "time of the end"—after the cause is denoted in these words: "Hast thou entered into the treasures of the snow, or hast thou seen the treasures of the hail, which I have reserved against the time of trouble, against the day of battle and war?"—the *I* is the Author of Nature and the Word, "Behold waters shall rise up out of the north, and shall be an overflowing flood, and shall overflow the land, and all that is therein—the city (that is, place, or places of concentrated population) and them that dwell therein."† "The sea is come up upon Babylon; she is covered with the multitude of the waves thereof." "I will make thee a terror, and thou shalt be no more; though thou be sought for, yet shalt thou never be found again." "The end is with a flood and desolations." "Those that escape shall be upon the mountains," "in the tops of the rugged rocks," the last place to seek safety, except from flood. Also, mariners from other quarters of the globe shall arrive in ships, sailing over submerged positions of former populous countries, to which there is now apparently "no house," or seaport town, "or entering in," or harbour. The vision then passes on to describe the aspect of the renovated earth surface, and its new climate—perhaps that of a perpetual equinox, or coincidence of the planes of the equator and ecliptic, with only polar oceans—yielding conditions of extreme fertility; and narrates as to "the nations of them that are saved" from the fearful catastrophe, some of which have, in remote portion of the globe, perhaps, seen no indication of its occurrence, except possibly disturbance, temporarily, of magnetic currents, or of adjacent sea surface. The vast destruction of life consequent in overwhelmed countries, and the drifting off, and aggregation of dead bodies in a great valley, with their subsequent systematic burial during "seven months," with many other corroborative narrations of events inevitable to the occurrence of another geological convulsion, such as has devastated sections of the earth many times in past ages, without destroying wholly either man or the animal creation, are vividly depictured in the writings of the Sacred prophets, and constitute one evidence of their Divine inspiration, and hence literal signification, being written not to mystify, but instruct Biblical students.

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* Bible readers will have no difficulty in finding the passages referred to here in any Concordance.

† Geology discloses evidences of past oceanic overflow as proceeding from the north and south alternately, and the last traced from the south.

The author now submits this attempt to elucidate the mysteries of the Pacific, narrated in the papers quoted from. The evidences of the transposition of sea and land, traces of ancient civilization in massive erections, as also works of utility and relics of art, are becoming very abundant; and, viewed in the light his researches and discovery cast upon their origin and history, may be studied with new and ever increasing interest. The successive developments of fulfilments of prophecy are especially subjects of great interest, because therefrom we may deduce approximate evidence as to the time when the prophetic visions shall be verified by a now coming, appalling, physical convulsion—preceded, probably, but almost simultaneous with a frightful earthquake, desolating the aspect of a vast area of populous lands, as Ischia is now depopulated.

There is still much to be fulfilled in Sacred prophecy, as signally demonstrative of a Divine Authorship, as the fulfilments noted in records of Jewish history, of earlier prophecies relating to the calamitous punishments of that stricken nation. Prior to the time of the "end" an outbreak of devastating forces, apparently as well supernatural as natural, will destroy, break up, and submerge sections of the earth. Internal chemical combinations of salts, with emanation of inflammable materials or gases, may rouse long dormant volcanic energies into play. The external features of sections of the earth may be so altered, as that its former outlines "shall not be remembered, nor come into mind." Existing lands may be submerged; anciently known continents, containing, as their mountain tops, the lonely islands of the Pacific and Atlantic, may rise into view, by the rearrangement of the waters of the surface of the globe, with reference to an altered centre of gravity. Gradually, quiescence of the disturbing forces in nature will supervene, and the advent of a New Earth be accomplished, whose dwellings under the balmy climate, perhaps, of a perpetual equinox, or free from extreme vicissitudes, shall be wondrous to contemplate. Amid the horrors of the convulsions that initiate and accomplish this change, races of mankind shall be saved, as in former catastrophes, some of them being represented as unaware of the vast calamity, and lamenting, from prince to pauper, for the dire destruction brought about, as soon as tidings thereof reach them, of populous cities and sections of continents being buried many fathoms deep, "to be found no more at all."

But before consummation of these dire catastrophes, there are to be notable incidents so remarkable in the literal accomplishment of the Sacred prophets' delineation of their visions, as to nations and kingly powers of earth uprising to effect great political changes, that those Biblical students, who may zealously trace their connection with fulfilments of ancient prophecy, will be made as "the wise," who, it is stated, "shall understand," and foresee, in a measure, the maturing of the times appointed. The great Northern power is to sweep with a vast army over southern provinces, overflowing and passing over. Having attained the site by conquest, the "robbers of my people" are to set themselves to "establish" or bring about the fulfilment of the prophetic "vision," that there shall be a highway between the seas for ready access to Eastern dominions. France may retain her Suez Canal; England have a similar means of transit in her own right, but the way of the Kings of the East will probably be by a broader channel between the Mediterranean and the Red Sea, *vià* the Valley of the Jordan and Dead Sea, which is alleged to be greatly below present sea level, or by utilizing the Euphrates River for navigation. In proximity to the northern sea mouth and harbour, the great Northern king will "plant the tabernacles of his palace on the glorious holy mountains" of Palestine. Escaping from treason, sedition, and treachery of even trusted nobles in his northern capitals, he shall hope for peace and renewed prosperity for his empire, while governing his vast dominion from a point of vantage "between the seas." Yet, alas! the Sacred prophet discloses the vanity of his hopes for long-continued life amid circumstances of aggrandisement. That wonderful prophecy also has yet to be fulfilled—"I gave Egypt for thy ransom, Ethiopia and Seba for thee." Palestine is to be unmistakably set apart for the concentration of a Jewish nation therein, to whom, by universal acclamation, all the social and political advantages of a free and independent people shall be ceded in perpetuity. There are many other interesting details of inspired prophecy, the literal fulfilment of which, when once the key is perceived, may be watched with deep heartfelt interest by the well-read christian, not ashamed to own his belief in the inspiration of the Sacred Scriptures, the national reverence for which has been the secret of England's supremacy among the nations.

The decadence of the nation until the prophetic time when "the power of the holy people shall be scattered," may be traceable perhaps hereafter from the legislative and general contemptuous treatment of the inspired Word of God, and its prohibition from State-school education.

A manifesto was drawn up and subscribed at the meeting of the British Association of 1865, in London, by 617 scientific men there assembled, many of them the highest known authorities on scientific questions in the world, which manifesto was then lodged in the Boadleian Library at Oxford. It affirms, *inter alia*, that "We conceive that it is impossible for the Word of God, as written in the Book of Nature—and God's Word written in the Holy Scripture, to contradict one another, however much they may appear to differ. . . We believe that it is the duty of every scientific student to investigate nature, simply for the purpose of elucidating truth." But practically, science, unfortunately, rarely consents to accept any scriptural elucidation, or attested confirmation of the mysterious workings of natural law in furtherance of developing sequences, deeming reference to such wholly out of place when named in connection with scientific researches. And yet, when carefully studied, the Sacred Book yields numerous indications that the ancient writers understood more of natural science than we commonly give them credit for, even admitting that the finite penmen employed to place on record their sublime visions of still future events, carried out an impulse of their human frailty sometimes,

[illegible]

[illegible] "There is nothing new" in operation of natural laws; and these, while controlled providentially, are never suspended from operation, so as practically to thwart the designs of the Great Designer. [illegible] the enunciator of truths meets with scant support: therefore, "in much wisdom is much grief."

FINIS.

Walker, May and Co., Printers, Mackillop-street, Melbourne.